HVR-Z5C/Z5E/Z5J/Z5N/Z5P/Z5U

RMT-831

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

Ver. 1.2 2009.04
Revision History

Revised-1

Replace the previously issued SERVICE MANUAL 9-852-623-12 with this Manual.

Photo: HVR-Z5J

N MECHANISM (MDX-N221)

Link

SPECIFICATIONS	BLOCK DIAGRAMS	REPAIR PARTS LIST
MODEL INFORMATION TABLE	FRAME SCHEMATIC DIAGRAMS	ADJUSTMENTS
SERVICE NOTE	SCHEMATIC DIAGRAMS	INSTRUCTION MANUAL
DISASSEMBLY	PRINTED WIRING BOARDS	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Mini DV Digital Video Cassette

DIGITAL HD VIDEO CAMERA RECORDER

SONY®

Sony EMCS Co.

2009D0800-1

© 2009.04

Published by Kohda TEC

These specifications are extracted from instruction manual of HVR-Z5C/Z5E/Z5P.

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SPECIFICATIONS

System

Video recording system (HDV)
2 rotary heads, Helical scanning system
Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system
Still image recording system
Exif Ver. 2.2*
Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps
Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)
Video signal
PAL color, CCIR standards
1080/50i specification
Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed
Tape speed (HDV)
Approx. 18.831 mm/s
Tape speed (DVCAM)
Approx. 28.221 mm/s
Tape speed (DV SP)
Approx. 18.831 mm/s
Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)
Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)
Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor/Charger)
Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1 cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)
Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
Approx. 1 037 000 pixels
Effective (movie, 4:3):
Approx. 778 000 pixels
Effective (still, 16:9):
Approx. 1 037 000 pixels
Effective (still, 4:3):
Approx. 778 000 pixels
Lens
G Lens
20 × (Optical), Approx. 30 × (Digital, when [D.EXTENDER] is set to [ON])
Focal length
f=4.1 - 82.0 mm (3/16 - 3 1/4 in.)
When converted to a 35 mm still camera
29.5 - 590 mm (1 3/16 - 23 1/4 in.) (16:9),
36.1 - 722 mm (1 7/16 - 28 1/2 in.) (4:3)
F1.6 - 3.4
Filter diameter: 72 mm (2 7/8 in.)
Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)
Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/25, auto gain, auto iris) (F 1.6)
* Exif' is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as your camcorder's setting information at the time of recording.
** The unique pixel array of Sony's ClearVid CMOS sensor and image processing system (new Enhanced Imaging Processor) allows for still image resolution equivalent to the sizes described.

Output connectors

A/V Remote Connector
10-pin connector
When A/V connecting cable is connected
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms)
When component A/V cable is connected
Y: 1 Vp-p, 75 Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDMI OUT jack
TypeA (19-pin)
(headphones) jack
Stereo-minijack (∅ 3.5 mm)

Input/Output connectors

LANC jack
Stereo mini-minijack (∅ 2.5 mm)
INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDV/DV jack
i.LINK interface (IEEE 1394, 4-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)
Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor/Charger)
Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 6.9 W
DVCAM (DV) recording 6.7 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.1 W
DVCAM (DV) recording 6.9 W
Operating temperature
0 ˚C to 40 ˚C (32 ˚F to 104 ˚F)
Storage temperature
-20 ˚C to +60 ˚C (-4 ˚F to +140 ˚F)
Dimensions (approx.)
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts with the battery pack (NP-F570)
Mass (approx.)
2.2 kg (5 lb 1 oz) including the lens hood with lens cover
2.5 kg (5 lb 6 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), lens hood with lens cover and microphone (ECM-XM1)
* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50 Hz/60 Hz
Power consumption
22 W
Output voltage
DC 8.4 V*
Operating temperature
0 ˚C to 40 ˚C (32 ˚F to 104 ˚F)
Storage temperature
-20 ˚C to +60 ˚C (-4 ˚F to +140 ˚F)
Dimensions (approx.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts
Mass (approx.)
390 g (13.8 oz) excluding the power cord (mains lead)
* See the label on the AC Adaptor/Charger for other specifications.

Rechargeable battery pack NP-F570

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Maximum charge voltage
DC 8.4 V
Maximum charge current
3.0 A
Capacity
15.8 Wh (2 200 mAh)
Type
Li-ion

Design and specifications are subject to change without notice.

These specifications are extracted from instruction manual of HVR-Z5N/Z5U.

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Self Diagnosis Supported model

HDV 1080i

SPECIFICATIONS

System

Video recording system (HDV)
2 rotary heads, Helical scanning system
Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system
Still image recording system
Exif Ver. 2.2*
Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps
Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)
Video signal
NTSC color, EIA standards
1080/60i specification
Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed
Tape speed (HDV)
Approx. 18.812 mm/s
Tape speed (DVCAM)
Approx. 28.193 mm/s
Tape speed (DV SP)
Approx. 18.812 mm/s
Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)
Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)
Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)
Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor/Charger)
Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1 cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)
Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
Approx. 1 037 000 pixels
Effective (movie, 4:3):
Approx. 778 000 pixels
Effective (still, 16:9):
Approx. 1 037 000 pixels
Effective (still, 4:3):
Approx. 778 000 pixels
Lens
G Lens
20 × (Optical), Approx. 30 × (Digital, when [D.EXTENDER] is set to [ON])
Focal length
f=4.1 - 82.0 mm (3/16 - 3 1/4 in.)
When converted to a 35 mm still camera
29.5 - 590 mm (1 3/16 - 23 1/4 in.) (16:9),
36.1 - 722 mm (1 7/16 - 28 1/2 in.) (4:3)
F1.6 - 3.4
Filter diameter: 72 mm (2 7/8 in.)
Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)
Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/30, auto gain, auto iris) (F 1.6)

* Exif' is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as your camcorder's setting information at the time of recording.

** The unique pixel array of Sony's ClearVid CMOS sensor and image processing system (new Enhanced Imaging Processor) allows for still image resolution equivalent to the sizes described.

Output connectors

A/V Remote Connector
10-pin connector
When A/V connecting cable is connected
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.286 Vp-p (burst signal), 75 Ω (ohms)
When component A/V cable is connected
Y: 1 Vp-p, 75 Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDMI OUT jack
TypeA (19-pin)
(headphones) jack
Stereo-minijack (∅ 3.5 mm)

Input/Output connectors

LANC jack
Stereo mini-minijack (∅ 2.5 mm)
INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)
HDV/DV jack
i.LINK interface (IEEE 1394, 4-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)
Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor/Charger)
Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 7.1 W
DVCAM (DV) recording 6.8 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.3 W
DVCAM (DV) recording 7.0 W
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (approx.)
HVR-Z5U:
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts with the battery pack (NP-F770)
HVR-Z5N:
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts with the battery pack (NP-F570)
Mass (approx.)
HVR-Z5U:
2.2 kg (5 lb 1 oz) including the lens hood with lens cover
2.6 kg (5 lb 10 oz) including the battery pack (NP-F770), cassette (PHDVM-63DM), lens hood with lens cover and microphone (ECM-XM1)
HVR-Z5N:
2.2 kg (5 lb 1 oz) including the lens hood with lens cover
2.5 kg (5 lb 6 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), lens hood with lens cover and microphone (ECM-XM1)

* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50 Hz/60 Hz
Power consumption
22 W
Output voltage
DC 8.4 V*
Operating temperature
0 °C to 40 °C (32 °F to 104 °F)
Storage temperature
-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (approx.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts
Mass (approx.)
390 g (13.8 oz) excluding the power cord (mains lead)

* See the label on the AC Adaptor/Charger for other specifications.

Rechargeable battery pack NP-F770 (supplied with HVR-Z5U)

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Maximum charge voltage
DC 8.4 V
Maximum charge current
3.0 A
Capacity
31.7 Wh (4 400 mAh)
Type
Li-ion

Rechargeable battery pack NP-F570 (supplied with HVR-Z5N)

Maximum output voltage
DC 8.4 V
Output voltage
DC 7.2 V
Maximum charge voltage
DC 8.4 V
Maximum charge current
3.0 A
Capacity
15.8 Wh (2 200 mAh)
Type
Li-ion

Design and specifications are subject to change without notice.

ENGLISH JAPANESE

自己診断搭載機種 HDV HDV 1080i InfoLITHIUM MEMORY STICK HDMI DVCAM PROGRESSIVE Mini DV Digital Video Cassette

概略仕様

システム

録画方式(HDV)	回転2ヘッドヘリカルスキャン
録画方式(DVCAM(DV))	回転2ヘッドヘリカルスキャン
静止画記録方式	Exif Ver.2.2*
録音方式(HDV)	回転ヘッド MPEG-1 Audio Layer2 16ビット Fs48kHz(ステレオ) 転送レート384kbps
録音方式(DVCAM(DV))	回転ヘッド、PCMシステム 12ビット Fs32kHz (チャンネル1/2 ステレオ) 16ビット Fs48kHz(チャンネル1/2 ステレオ)
映像信号	NTSCカラー、EIA標準方式 1080/60i方式
使用可能カセット	Mini DV マークのついたDVカセットまたは DVCAM マークのついたミニDVCAMカセット
テープ速度(HDV)	約8.812mm/秒
テープ速度(DVCAM)	約8.193mm/秒
テープ速度(DV SP)	約8.812mm/秒
録画/再生時間(HDV)	63分(PHDVM-63DM使用時)
録画/再生時間(DVCAM)	41分(PHDVM-63DM使用時)
録画/再生時間(DV SP)	63分(PHDVM-63DM使用時)
早送り、巻き戻し時間	バッテリー使用時： 約2分40秒(PHDVM-63DM使用時) ACアダプター/チャージャー使用時： 約2分45秒(PHDVM-63DM使用時)
ファインダー	電子ファインダー：カラー、モノクロ 画面サイズ：1.1cm(0.45型、アスペクト比16:9) 総合ドット数：1 226 880ドット (852×3[RGB]×480相当)
撮像素子	6.0mm(1/3型)3CMOSセンサー 総画素数：約12万画素 静止画記録画素数：最大20万画素相当**(4 440×810)(HDV/DV 16：9記録時) 動画時有効画素数(16：9モード)：約204万画素 動画時有効画素数(4：3モード)：約158万画素 静止画時有効画素数(16：9モード)：約204万画素 静止画時有効画素数(4：3モード)：約158万画素
ズームレンズ	Gレンズ 20倍(光学)、約30倍(デジタル、デジタルエクステンダー[ON]時) f=4.1〜82.0mm 35mmカメラ換算 29.5〜590mm(16:9モード) (4:3モードでは36.1〜722mm) F1.6〜3.4 フィルター径2mm
色温度切り換え	オート ワンプッシュ(A、B) [屋内](3 200K) [屋外](5 800K±7段階) 色温度指定(2 300〜15 000K、100K刻み)
最低被写体照度	1.5lx(ルクス)(シャッタースピード固定(1/30)、オートゲインコントロール、アイリスオート(F1.6)

*(社)電子情報技術産業協会(JEITA)にて制定された、撮影情報などの付帯情報を追加することができる静止画用のファイルフォーマット。

**ソニー独自のクリアビッドCMOSセンサーの画素配列と画像処理システム新エンハンスドイメージングプロセッサーにより、静止画は表記の記録サイズを実現しています。

出力端子

A/Vリモート端子	10ピン特殊コネクター A/V接続ケーブル挿入時 映像：1 Vp-p、75Ω Y出力 1Vp-p、75Ω C出力 0.286Vp-p(バースト)、75Ω コンポーネントA/Vケーブル挿入時 Y：1Vp-p、75Ω PB/PR, CB/CR：±350mV、75Ω 音声：-10dBu(47kΩ負荷時)、出力インピーダンス2.2 kΩ以下 (0dBu=0.775Vrms)
HDMI OUT端子	タイプA(19ピン)
(ヘッドホン)端子	ステレオミニジャック(φ3.5mm)

入/出力端子

LANC 端子	ステレオミニミニジャック2.5(2.5mm)
INPUT1/INPUT2端子	XLR3ピン、凹 -48dBu: 3kΩ +4dBu: 10kΩ (0dBu=0.775Vrms)
HDV/DV端子	i.LINK(IEEE1394 4ピンコネクター S100)

液晶画面

画面サイズ	8.0cm(3.2型、アスペクト比16:9)
総ドット数	921 600ドット 横 920×縦480

電源部、その他

電源電圧	DC7.2V(バッテリーパック使用時) DC8.4V(ACアダプター/チャージャー使用時)
消費電力*	マイク(ECM-XM1)、ファインダー使用時、明るさ標準： HDV記録時7.1W DVCAM(DV)記録時6.8W マイク(ECM-XM1)、液晶画面使用時、明るさ標準： HDV記録時7.3W DVCAM(DV)記録時7.0W
動作温度	0℃〜40℃
保存温度	-20℃〜+60℃
外形寸法	169×188×451mm (突起部含む) (幅×高さ×奥行き)
本体質量	約1.2kg(レンズフード含む)
撮影時総質量	約1.6kg(バッテリーパック(NP-F770)、テープ(PHDVM-63DM)、レンズカバー付きフード、マイク(ECM-XM1)含む。)

* HVR-MRC1使用時は消費電力が約2.5W増加します。

本機の仕様および外観は、改良のため予告なく変更することがありますが、ご了承ください。

Model information table

Model	HVR-Z5C	HVR-Z5E	HVR-Z5J	HVR-Z5N	HVR-Z5P	HVR-Z5U
Destination	CH	AEP	J	E	E	US, CND
Color system	PAL	PAL	NTSC	NTSC	PAL	NTSC

- Abbreviation
  CH : Chinese model
  CND : Canadian model
  J : Japanese model

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

サービス，点検時には次のことにご注意下さい。

1. **注意事項をお守りください。**
   サービスのとき特に注意を要する個所については，キャビネット，シャーシ，部品などにラベルや捺印で注意事項を表示しています。これらの注意書き及び取扱説明書等の注意事項を必ずお守り下さい。
2. **指定部品のご使用を**
   セットの部品は難燃性や耐電圧など安全上の特性を持ったものとなっています。従って交換部品は，使用されていたものと同じ特性の部品を使用して下さい。特に回路図，部品表に⚠印で指定されている安全上重要な部品は必ず指定のものをご使用下さい。
3. **部品の取付けや配線の引きまわしはもとどおりに**
   安全上，チューブやテープなどの絶縁材料を使用したり，プリント基板から浮かして取付けた部品があります。また内部配線は引きまわしやクランパによって発熱部品や高圧部品に接近しないよう配慮されていますので，これらは必ずもとどおりにして下さい。
4. **サービス後は安全点検を**
   サービスのために取外したネジ，部品，配線がもとどおりになっているか，またサービスした個所の周辺を劣化させてしまったところがないかなどを点検し，安全性が確保されていることを確認して下さい。
5. **チップ部品交換時の注意**
   - 取外した部品は再使用しないで下さい。
   - タンタルコンデンサのマイナス側は熱に弱いため交換時は注意して下さい。
6. **フレキシブルプリント基板の取扱いについて**
   - コテ先温度を270℃前後にして行なって下さい。
   - 同一パターンに何度もコテ先を当てないで下さい。（３回以内）
   - パターンに力が加わらないよう注意して下さい。
7. **無鉛半田について**
   無鉛半田を使用している基板には，無鉛（Lead Free）を意味するレッドフリーマークがプリントされています。
   （注意：基板サイズによっては，無鉛半田を使用していてもレッドフリーマークがプリントされていないものがあります）
   ：レッドフリーマーク
   無鉛半田には，以下の特性があります。
   - 融点が従来の半田よりも約40℃高い。
     従来の半田こてをそのまま使用することは可能ですが，少し長めにこてを当てる必要があります。
     温度調節機能のついた半田こてを使用する場合，約350℃に設定して下さい。
     注意：半田こてを長く当てすぎると，基板のパターン（銅箔）がはがれてしまうことがありますので，注意して下さい。
   - 粘性が強い
     従来の半田よりも粘性が強いため，IC端子などが半田ブリッジしないように注意して下さい。
   - 従来の半田と混ぜて使用可能
     無鉛半田には無鉛半田を追加するのが最適ですが，従来の半田を追加しても構いません。

1. SERVICE NOTE

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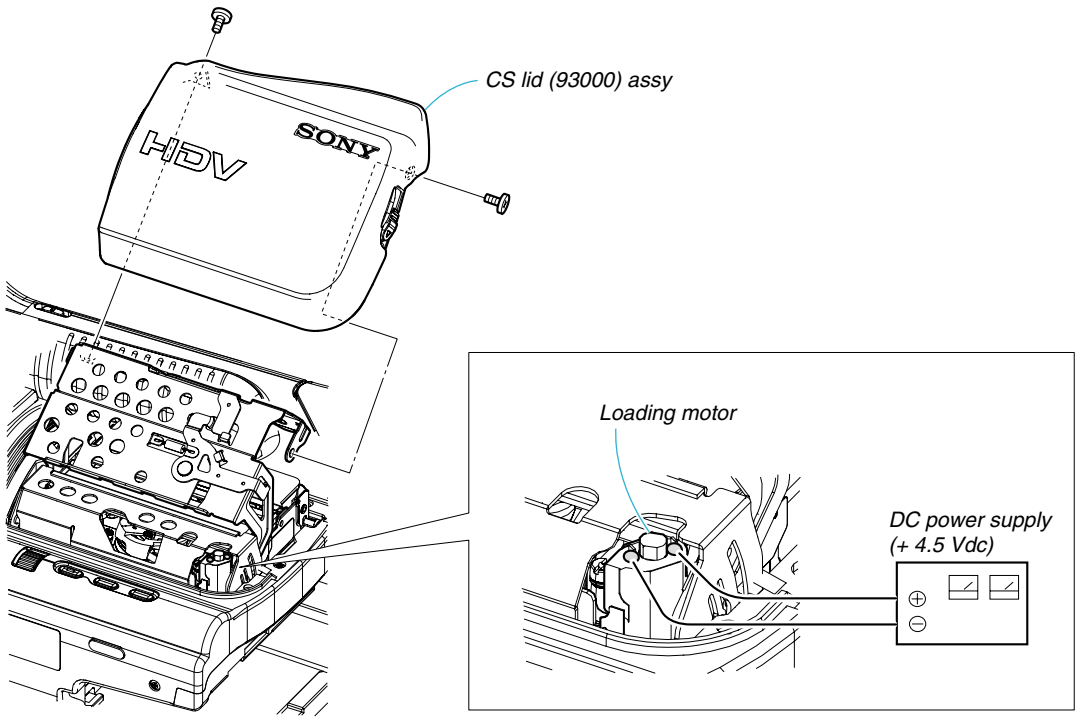
1-1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied to the battery terminal using the regulated power supply (8.4V), the power is shut off so that the unit cannot operate.
These following method is available to prevent this.

Method:
Use the AC adaptor/charger (AC-VQ1050) and connecting cord (DK-415).

1-2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Remove the Power supply.
② Remove two screws and the CS lid (93000) assy.
③ Supply +4.5V from the DC power supply to the loading motor and unload.



1-3. SETTING THE "FORCED POWER ON" MODE

It is possible to turn on power by adjustment remote commander (RM-95 or NEW LANC JIG).
Operate the VTR function using the adjustment remote commander.

1-3-1. Setting the "Forced Camera Power ON" Mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 01 and press the "PAUSE (Write) " button of the adjustment remote commander.

1-3-2. Setting the "Forced VTR Power ON" Mode

1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 02 and press the "PAUSE (Write) " button of the adjustment remote commander.

1-3-3. Exiting the "Forced Power ON" Mode

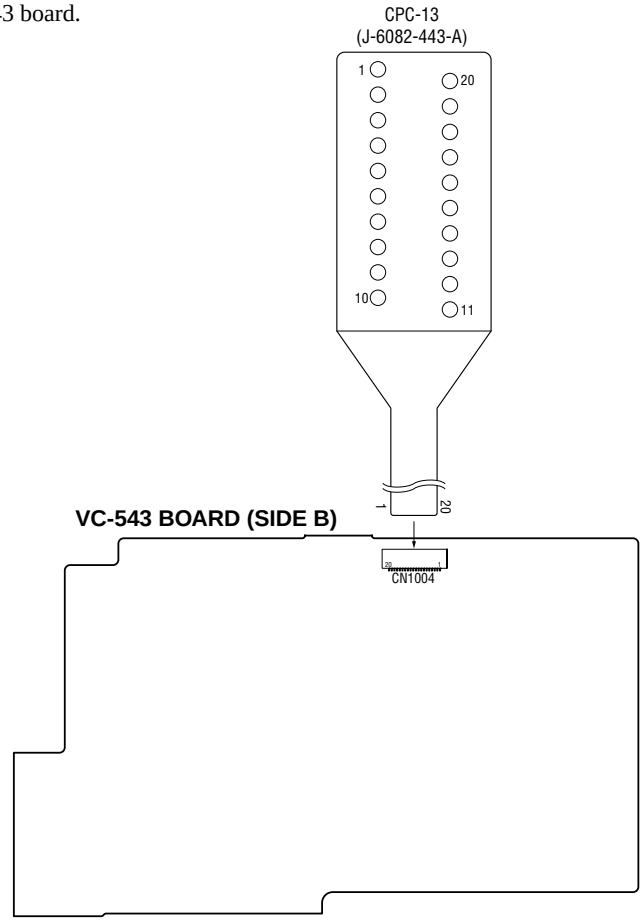
1) Select page: 0, address: 01, and set data: 01.
2) Select page: A, address: 10, set data: 00 and press the "PAUSE (Write) " button of the adjustment remote commander.
3) Select page: 0, address: 01, and set data: 00.

1-4. USING SERVICE JIG

Connect the CPC-13 jig (J-6082-443-A) to the CN1004 on the VC-543 board.

Pin No.	Signal Name	Pin No.	Signal Name
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	GND	17 (4)	MD2
8 (13)	GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

Note: The pin number in ( ) is test terminal number of CN1004 on the VC-543 board.



1-5. SELF-DIAGNOSIS FUNCTION

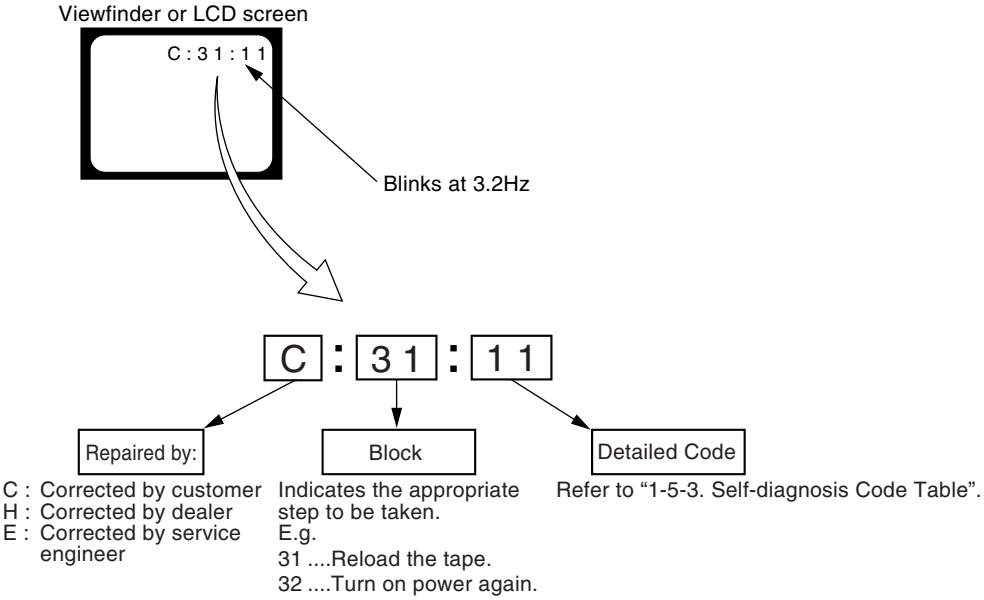
1-5-1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or LCD screen what to do.

Details of the self-diagnosis functions are provided in the Instruction manual.

1-5-2. Self-diagnosis Display

When problems occur while the unit is operating, the counter of the viewfinder or LCD screen shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.


Viewfinder or LCD screen
C : 3 1 : 1 1
Blinks at 3.2Hz
C : 3 1 : 1 1
Repaired by:
Block
Detailed Code
C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer
Indicates the appropriate step to be taken.
E.g.
31 ....Reload the tape.
32 ....Turn on power again.
Refer to “1-5-3. Self-diagnosis Code Table”.

1-5-3. Self-diagnosis Code Table

Self-diagnosis Code				Symptom/State	Correction
Repaired by:	Block Function		Detailed Code		
C	0	4	0 0	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	0	6	0 0	The battery is too hot.	Replace the battery or remove it and put it in cool place.
C	2	1	0 0	Condensation.	Remove the cassette, and insert it again after one hour.
C	2	2	0 0	Video head is dirty.	Clean with the optional cleaning cassette.
C	3	1	1 0	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	1 1	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	3	1	2 0	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2 1	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	3	1	2 2	T reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2 3	S reel fault.	Load the tape again, and perform operations from the beginning.
C	3	1	2 4	T reel and S reel FG short fault.	Load the tape again, and perform operations from the beginning.
C	3	1	3 0	FG fault when starting capstan.	Load the tape again, and perform operations from the beginning.
C	3	1	4 0	FG fault when starting drum.	Load the tape again, and perform operations from the beginning.
C	3	1	4 2	FG fault during normal drum operations.	Load the tape again, and perform operations from the beginning.
C	3	1	7 2	Retry fault when catching one's finger in cassette compartment.	Load the tape again, and perform operations from the beginning.
C	3	1	9 7	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Load the tape again, and perform operations from the beginning.
C	3	1	9 8	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Load the tape again, and perform operations from the beginning.
C	3	1	9 9	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Load the tape again, and perform operations from the beginning.
C	3	2	1 0	LOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	1 1	UNLOAD direction loading motor time-out.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2 0	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2 1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2 2	T reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2 3	S reel fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2 4	T reel and S reel FG short fault.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3 0	FG fault when starting capstan.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4 0	FG fault when starting drum.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4 2	FG fault during normal drum operations.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	6 0	Difficult to adjust focus (Cannot initialize focus.)	Remove the battery or power cable, connect, and perform operations from the beginning. If it does not recover, inspect the focus MR sensor of lens drive block (Pin ⑩, ⑫ of CN5002 on the VC-543 board). If not faulty, inspect the focus motor drive circuit (IC6001 on the VC-543 board).

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	3 2	7 2	Retry fault when catching one's finger in cassette compartment.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	9 7	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	9 8	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3 2	9 9	Vector fault (Judgement with the set state that is impossible actually for fault of sensors.)	Remove the battery or power cable, connect, and perform operations from the beginning.
E	2 0	0 0	EEPROM data are rewritten.	Make EEPROM data correct value.
E	6 1	1 0	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the zoom MR sensor of lens drive block (Pin ㉜, ㉞ of CN5002 on the VC-543 board) when zooming is performed when the zoom switch is operated and the zoom motor drive circuit (IC6001 on the VC-543 board) when zooming is not performed.
E	6 1	1 1	Focus lens initializing failure and zoom lens initializing failure occur simultaneously.	Check both C: 32: 60 and E: 61: 10 of the self-diagnosis code.
E	6 1	3 0	Reset position detect error when stepper iris is initialized.	Turn on the power and set to T (telephoto) end by rotating the ZOOM manual ring. While observing the iris blades in the lens, turn on the power again and check the iris blades in the lens work properly. Inspect the iris drive motor of lens drive block (Pin ⑯ to ⑲ of CN5002 on the VC-543 board), when the iris does not operate. Inspect the iris reset sensor of lens drive block (Pin ⑬ to ⑮ of CN5002 on the VC-543 board), when the iris operate.
E	6 2	0 0	Steadyshot function does not work well. (With pitch angular velocity sensor output stopped.)	Inspect pitch angular velocity sensor (SE8501 on the GY-014 board) peripheral circuits.
E	6 2	0 1	Steadyshot function does not work well. (With yaw angular velocity sensor output stopped.)	Inspect yaw angular velocity sensor (SE8502 on the GY-014 board) peripheral circuits.
E	6 2	0 2	Abnormality of IC for steadyshot.	Inspect the steadyshot circuit (IC7001 on the VC-543 board). If it does not recover, replace the VC-543 board. (Note) If an error occurs again, replace the lens block.
E	6 2	0 3	IC for steadyshot and micro controller communication abnormality among.	Inspect the steadyshot circuit (IC7001 on the VC-543 board).
E	6 2	1 0	Shift lens initializing failure	Inspect the EEPROM (IC4202 on the VC-543 board). If it does not recover, replace the VC-543 board. (Note) If an error occurs again, replace the lens block.
E	6 2	1 1	Shift lens overheating (Pitch)	Inspect the IC7001 and peripheral circuits on the VC-543 board. If it does not recover, replace the VC-543 board. (Note) If an error occurs again, replace the lens block.
E	6 2	1 2	Shift lens overheating (Yaw)	Inspect the IC7001 and peripheral circuits on the VC-543 board. If it does not recover, replace the VC-543 board. (Note) If an error occurs again, replace the lens block.
E	6 2	2 0	Abnormality of lens thermister	Inspect the IC7001 and peripheral circuits on the VC-543 board. If it does not recover, replace the VC-543 board. (Note) If an error occurs again, replace the lens block.

Note: When replacing the VC-543 board, remove the EEPROM (IC4202) from the VC-543 board that is going to be repaired. Install the removed EEPROM (IC4202) to the replaced VC-543 board.

1. SERVICE NOTE

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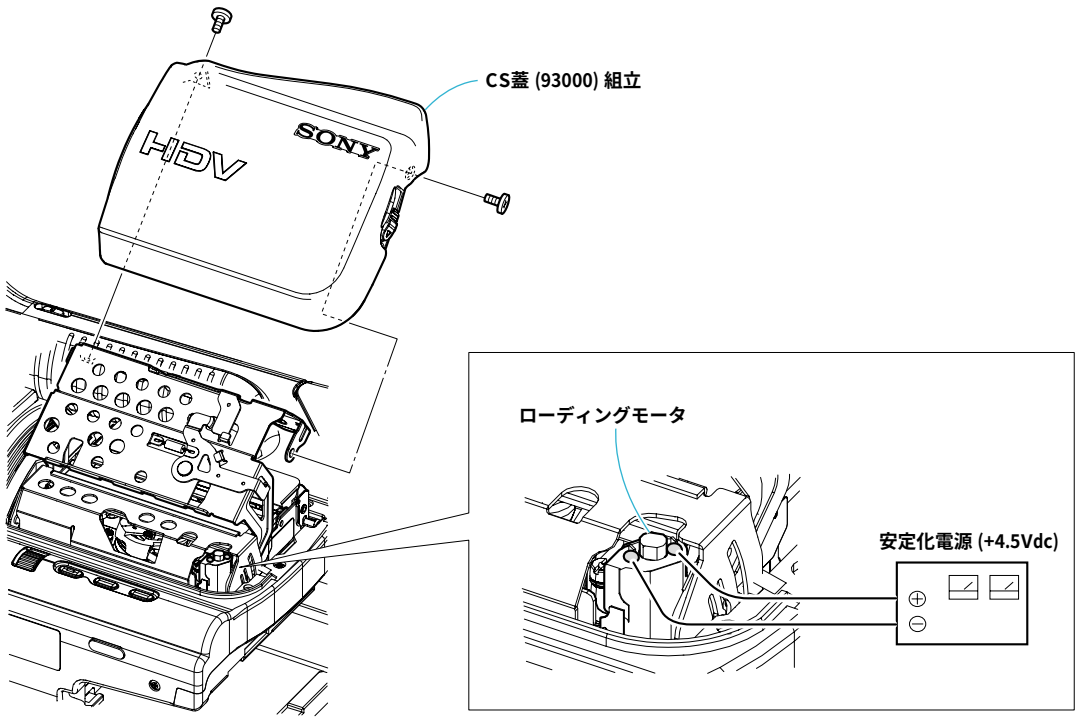
1-1. 修理時の電源供給について

本機では，安定化電源（8.4Vdc）からバッテリ端子に電源を供給した場合，約10秒後にシャットオフし，動作しなくなります。
これを避けるため，下記の方法を用いてください。

方法：
ACアダプタ/ チャージャ（AC-VQ1050）と接続コード（DK-415）を使用する。

1-2. イジェクトしない時のカセット取出し方法（強制イジェクト）

① 電源を外す。
② ねじ2本とCS蓋 (93000) 組立を外す。
③ 安定化電源より＋4.5Vをローディングモータに加え，アンローディングさせる。



1-3. 強制電源ONモードの設定

調整リモコン（RM-95またはNEW LANC JIG）を使用して，電源を入れることが出来ます。
VTR操作は調整リモコンで行えます。

1-3-1. 強制カメラ電源ONモードの設定

1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：01をセットしPAUSE（Write）ボタンを押す。

1-3-2. 強制VTR電源ONモードの設定

1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：02をセットしPAUSE（Write）ボタンを押す。

1-3-3. 強制電源ONモードの解除

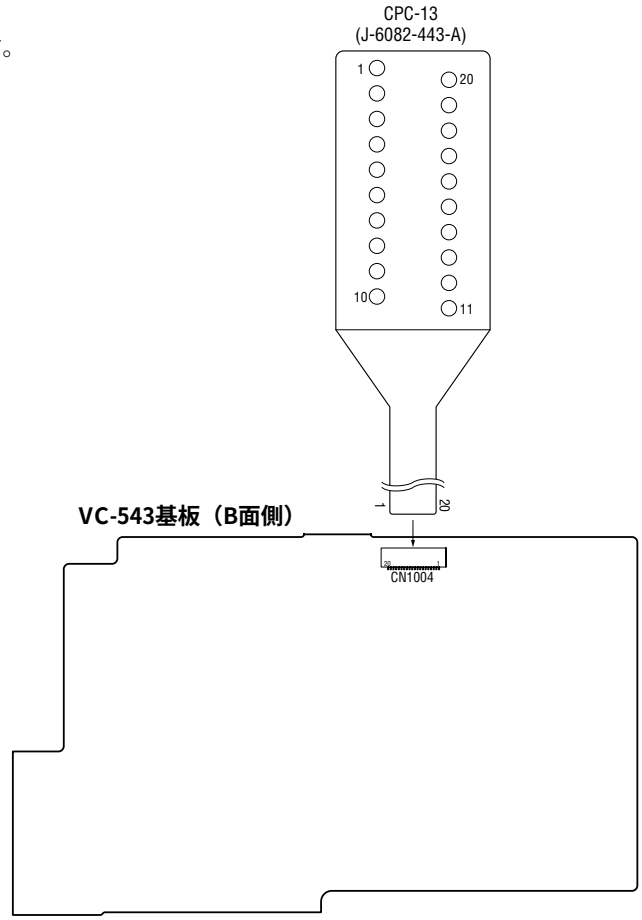
1) ページ：0，アドレス：01にデータ：01をセット。
2) ページ：A，アドレス：10にデータ：00をセットしPAUSE（Write）ボタンを押す。
3) ページ：0，アドレス：01にデータ：00をセット。

1-4. 使用サービス治具

CPC-13治具（J-6082-443-A）をVC-543基板CN1004に接続します。

端子番号	信号名称	端子番号	信号名称
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	GND	17 (4)	MD2
8 (13)	GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

注意：( )内の端子番号は，VC-543基板CN1004のテスト端子番号です。



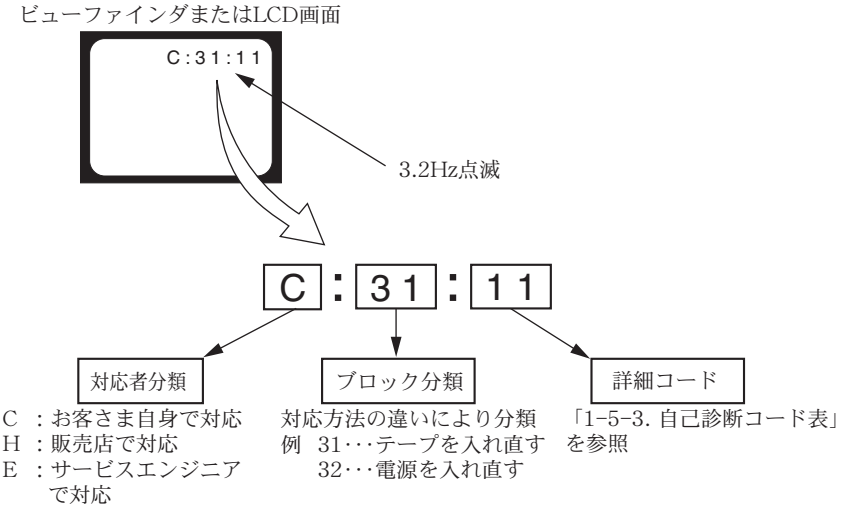
1-5. 自己診断機能

1-5-1. 自己診断機能について

本機の動作に不具合が生じたとき，自己診断機能が働き，ビューファインダまたはLCD画面に，どう処置したらよいか判断できる表示を行います。自己診断機能については取扱説明書にも掲載されています。

1-5-2. 自己診断表示

本機の動作に不具合が生じたとき，ビューファインダまたはLCD画面のカウンタ表示部分がアルファベットと数字の4桁表示になり，3.2Hzで点滅します。この5文字の表示によって対応者分類および不具合の生じたブロックの分類，不具合の詳細コードを示します。



1-5-3. 自己診断コード表

自己診断コード			症状／状態	対応／方法
対応者	ブロック機能	詳細コード		
C	0 4	0 0	標準でないバッテリを使用している	インフォリチウムバッテリを使用する。
C	0 6	0 0	バッテリが高温になっている	バッテリを交換するか、バッテリを涼しいところに置く。
C	2 1	0 0	結露している	カセットを取り出して，約1時間してからもう一度入れ直す。
C	2 2	0 0	ビデオヘッドが汚れている	別売のクリーニングカセットできれいにする。
C	3 1	1 0	LOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す。
C	3 1	1 1	UNLOAD方向，ローディング所定時間内終了せず	テープを入れ直し，再度操作し直す。
C	3 1	2 0	UNLOAD時，Tリール側テープ弛み	テープを入れ直し，再度操作し直す。
C	3 1	2 1	UNLOAD時，Sリール側テープ弛み	テープを入れ直し，再度操作し直す。
C	3 1	2 2	Tリール異常	テープを入れ直し，再度操作し直す。
C	3 1	2 3	Sリール異常	テープを入れ直し，再度操作し直す。
C	3 1	2 4	TリールおよびSリールFGショート異常	テープを入れ直し，再度操作し直す。
C	3 1	3 0	キャプスタン起動時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	4 0	ドラム起動時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	4 2	ドラム定常時FG異常	テープを入れ直し，再度操作し直す。
C	3 1	7 2	カセコン指はさみリトライ異常	テープを入れ直し，再度操作し直す。
C	3 1	9 7	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 1	9 8	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 1	9 9	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	テープを入れ直し，再度操作し直す。
C	3 2	1 0	LOAD方向，ローディング所定時間内終了せず	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	1 1	UNLOAD方向，ローディング所定時間内終了せず	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 0	UNLOAD時，Tリール側テープ弛み	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 1	UNLOAD時，Sリール側テープ弛み	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 2	Tリール異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 3	Sリール異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	2 4	TリールおよびSリールFGショート異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	3 0	キャプスタン起動時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	4 0	ドラム起動時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	4 2	ドラム定常時FG異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3 2	6 0	フォーカスが合いにくい（フォーカスの初期化ができない）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。復帰しない場合,レンズドライブブロックのフォーカスMRセンサ(VC-543基板CN5002 ⑩,⑫ ピン)を点検。問題がなければフォーカスモータドライブ回路(VC-543基板IC6001)を点検。

自己診断コード				症状／状態	対応／方法
対応者	ブロック機能		詳細コード		
C	3	2	7 2	カセコン指はさみリトライ異常	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3	2	9 7	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3	2	9 8	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
C	3	2	9 9	ベクタ異常（センサ類の異常で現実に有り得ないセット状態と判断）	バッテリまたは電源ケーブルを外して付け直し,再度操作し直す。
E	2	0	0 0	EEPROMが書き換えられている	EEPROMのデータを元の値に戻す。
E	6	1	1 0	ズーム動作の異常(ズームレンズの初期化ができない)	ズームレバーを操作した時,ズーム動作をすればレンズドライブブロックのズームMRセンサ(VC-543基板CN5002 ㉜, ㉞ピン)を点検。ズーム動作をしなければズームモータドライブ回路(VC-543基板IC6001)を点検。
E	6	1	1 1	フォーカスレンズ初期化異常,ズームレンズ初期化異常の同時発生	自己診断コードC: 32: 60とE: 61: 10の両方を点検。
E	6	1	3 0	ステッパアイリス初期化時リセット位置検出エラー	電源投入後,ズームマニュアルリングを回してT(telephoto)端にする。レンズ内のアイリス羽に注目しながら電源を再投入し,レンズ内の羽が動作しているか確認する。アイリスが動作しない場合は,レンズドライブブロックのアイリスモータドライブ(VC-543基板CN5002 ⑯～⑲ピン)を点検。アイリスが動作する場合は,レンズドライブブロックのアイリスリセットセンサ(VC-543基板CN5002 ⑬～⑮ピン)を点検。
E	6	2	0 0	手振れ補正が効きにくい(PITCH角速度センサ出力張り付き)	PITCH角速度センサ(GY-014基板SE8501)周辺回路を点検。
E	6	2	0 1	手振れ補正が効きにくい(YAW角速度センサ出力張り付き)	YAW角速度センサ(GY-014基板SE8502)周辺回路を点検。
E	6	2	0 2	手振れ補正用ICの異常	手振れ補正回路(VC-543基板IC7001)を点検。復帰しない場合,VC-543基板を交換する。(注意)エラーが再度発生する場合は,レンズブロックを交換する。
E	6	2	0 3	手振れ補正用ICとマイクロコントローラとの通信異常	手振れ補正回路(VC-543基板IC7001)を点検。
E	6	2	1 0	シフトレンズ初期化異常	EEPROM(VC-543基板IC4202)を点検。復帰しない場合,VC-543基板を交換する。(注意)エラーが再度発生する場合は,レンズブロックを交換する。
E	6	2	1 1	シフトレンズオーバーヒート(PITCH)	VC-543基板のIC7001および周辺回路を点検。復帰しない場合,VC-543基板を交換する。(注意)エラーが再度発生する場合は,レンズブロックを交換する。
E	6	2	1 2	シフトレンズオーバーヒート(YAW)	VC-543基板のIC7001および周辺回路を点検。復帰しない場合,VC-543基板を交換する。(注意)エラーが再度発生する場合は,レンズブロックを交換する。
E	6	2	2 0	レンズサーミスタの異常	VC-543基板のIC7001および周辺回路を点検。復帰しない場合,VC-543基板を交換する。(注意)エラーが再度発生する場合は,レンズブロックを交換する。

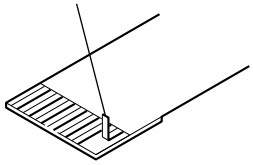
注意 ： VC-543基板を交換する場合は，修理するVC-543基板からEEPROM(IC4202)を取り外す。取り外したEEPROM(IC4202)は取り替えたVC-543基板に取り付ける。

2. DISASSEMBLY

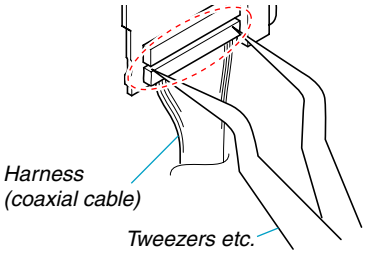
NOTE FOR REPAIR

- Make sure that the flat cable and flexible board are not cracked of bent at the terminal. Do not insert the cable insufficiently nor crookedly.
- When remove a connector, don't pull at wire of connector. It is possible that a wire is snapped.
- When installing a connector, don't press down at wire of connector. It is possible that a wire is snapped.

Cut and remove the part of gilt which comes off at the point. (Be careful or some pieces of gilt may be left inside)

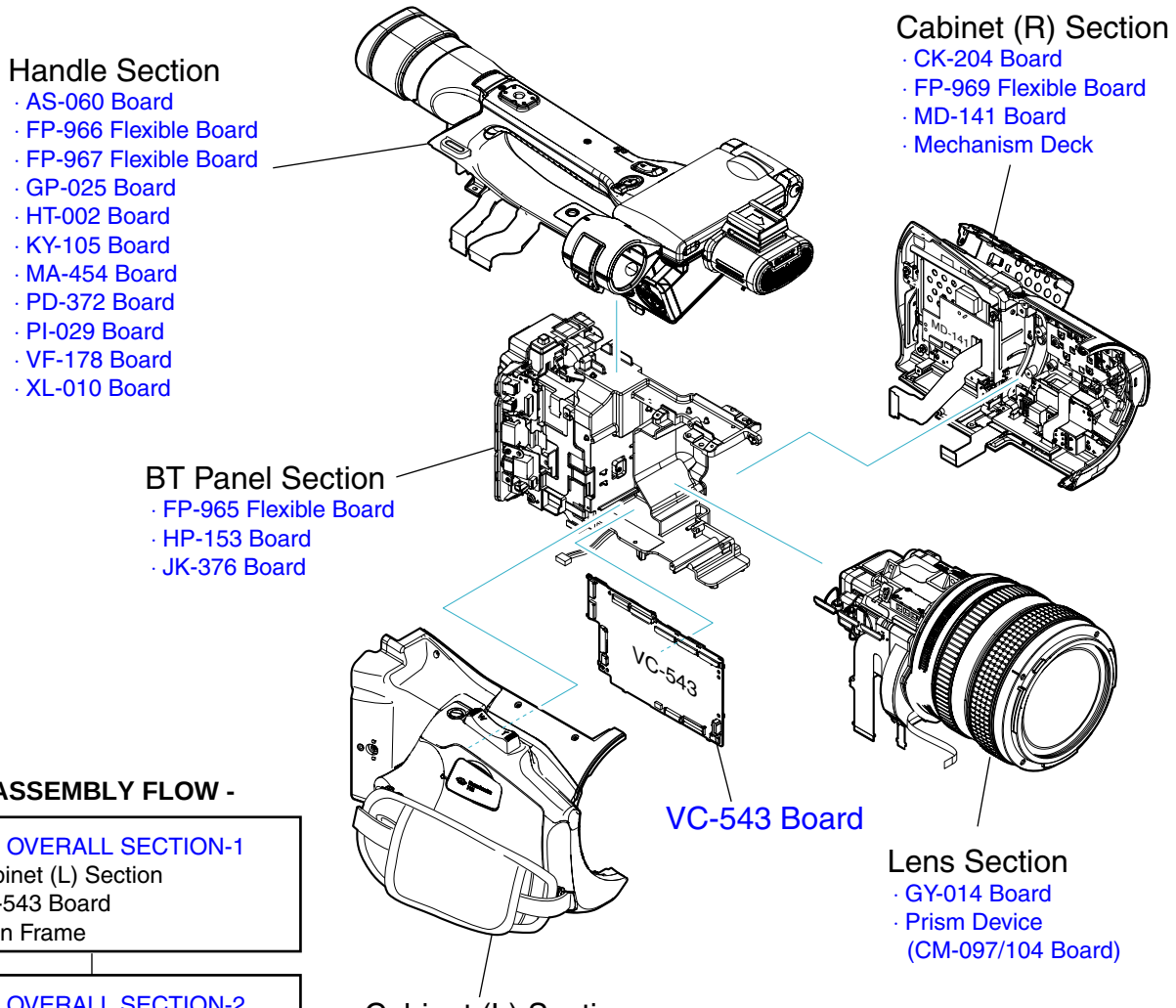


NOTE FOR DISCONNECTING THE HARNESS (COAXIAL CABLE)



When disconnecting the harness (COAXIAL CABLE), do not pull the harness part but pull off the connector body with tweezers etc.

2-1. IDENTIFYING PARTS



- DISASSEMBLY FLOW -

2-2-1. OVERALL SECTION-1
- Cabinet (L) Section
- VC-543 Board
- Main Frame

2-2-2. OVERALL SECTION-2
- Cabinet (R) Section
- Handle Section-1
- Lens Section

2-2-3. CABINET (R) SECTION
- MD Section
- CK-204 Board
- AL Lid (93000)

2-2-4. MD SECTION
- Mechanism Deck

2-2-5. HANDLE SECTION-1
- EVF Section
- Microphone Holder Assy

2-2-6. HANDLE SECTION-2
- Control Panel Block
- PI-029 Board
- LCD Section

2-2-7. HANDLE SECTION-3
- GP-025 Board
- XL-010 Board
- Handle Section-4

2-2-8. HANDLE SECTION-4
- AS-060 Board
- Microphone Section

2-2-9. LCD SECTION
- Hinge Block
- LCD

2-2-10. CABINET (L) SECTION
- Cabinet (L) Block
- Cabinet (G) Block

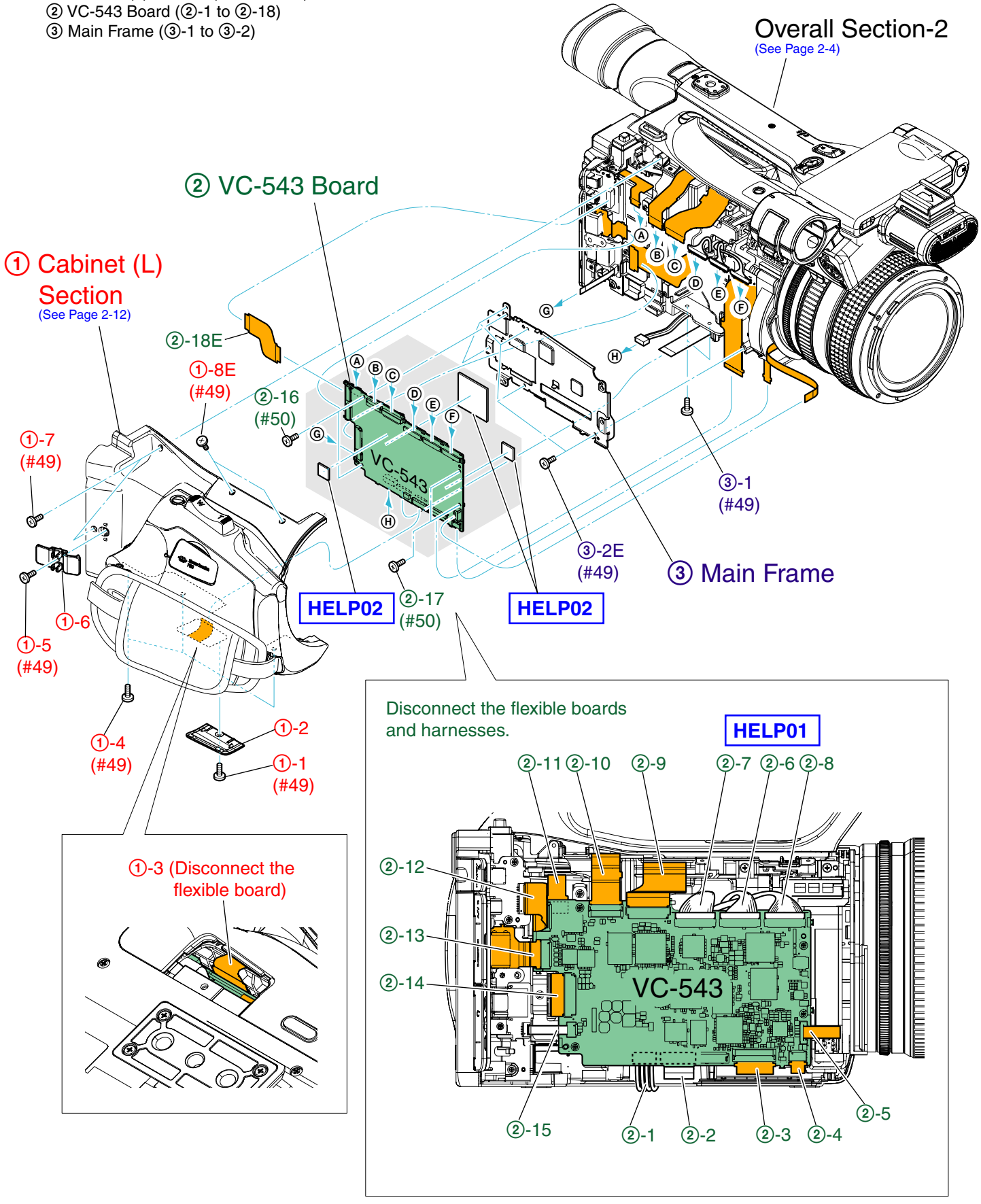
2-2. DISASSEMBLY

EXPLODED VIEW HARDWARE LIST

2-2-1. OVERALL SECTION-1

Follow the disassembly in the numerical order given.

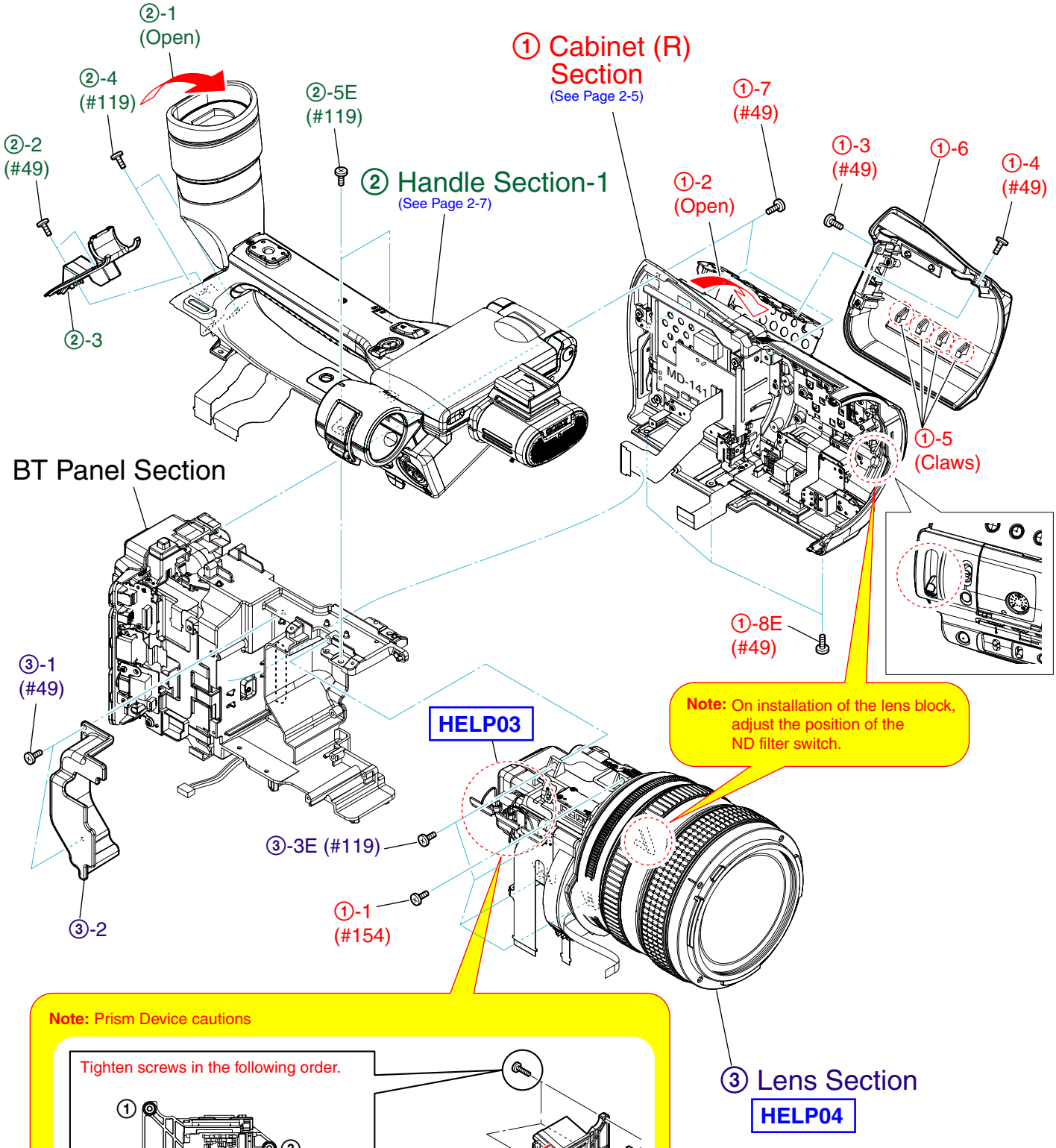
① Cabinet (L) Section (①-1 to ①-8)
② VC-543 Board (②-1 to ②-18)
③ Main Frame (③-1 to ③-2)



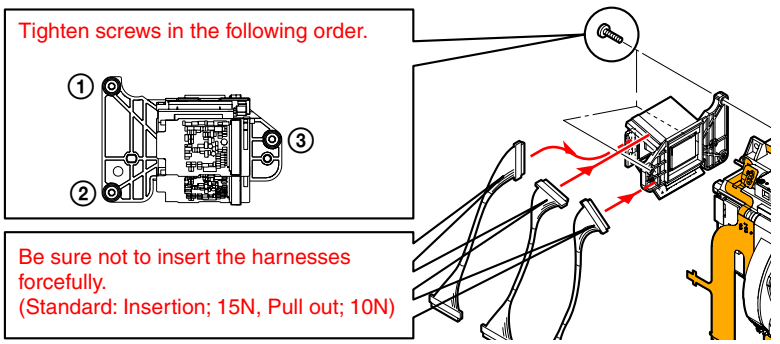
2-2-2. OVERALL SECTION-2

EXPLODED VIEW | HARDWARE LIST

Follow the disassembly in the numerical order given.
① Cabinet (R) Section (①-1 to ①-8)
② Handle Section-1 (②-1 to ②-5)
③ Lens Section (③-1 to ③-3)



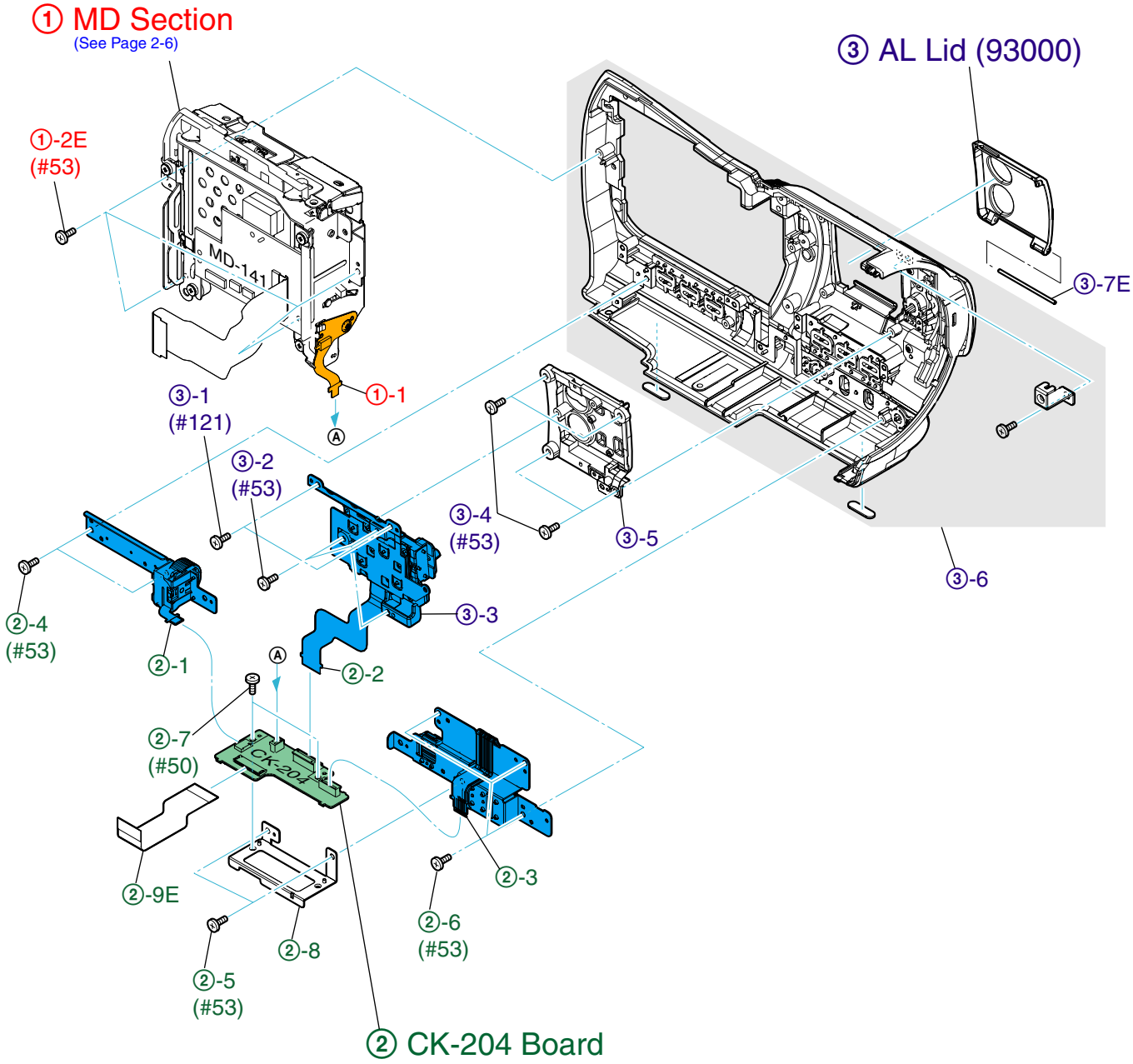
Note: Prism Device cautions



2-2-3. CABINET (R) SECTION

EXPLODED VIEW HARDWARE LIST

Follow the disassembly in the numerical order given.
① MD Section (①-1 to ①-2)
② CK-204 Board (②-1 to ②-9)
③ AL Lid (93000) (③-1 to ③-7)

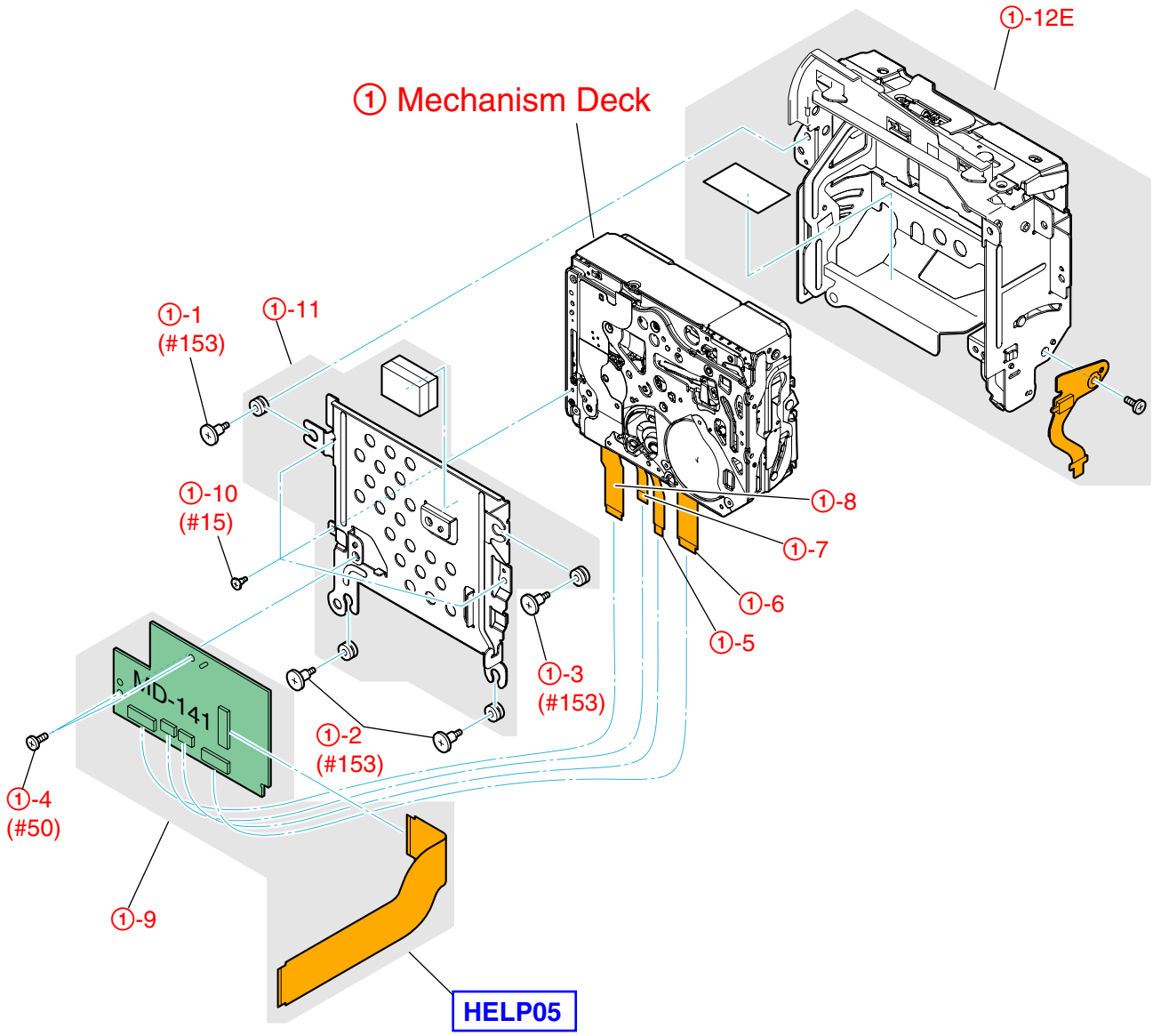


2-2-4. MD SECTION

Follow the disassembly in the numerical order given.

① Mechanism Deck (①-1 to ①-12)

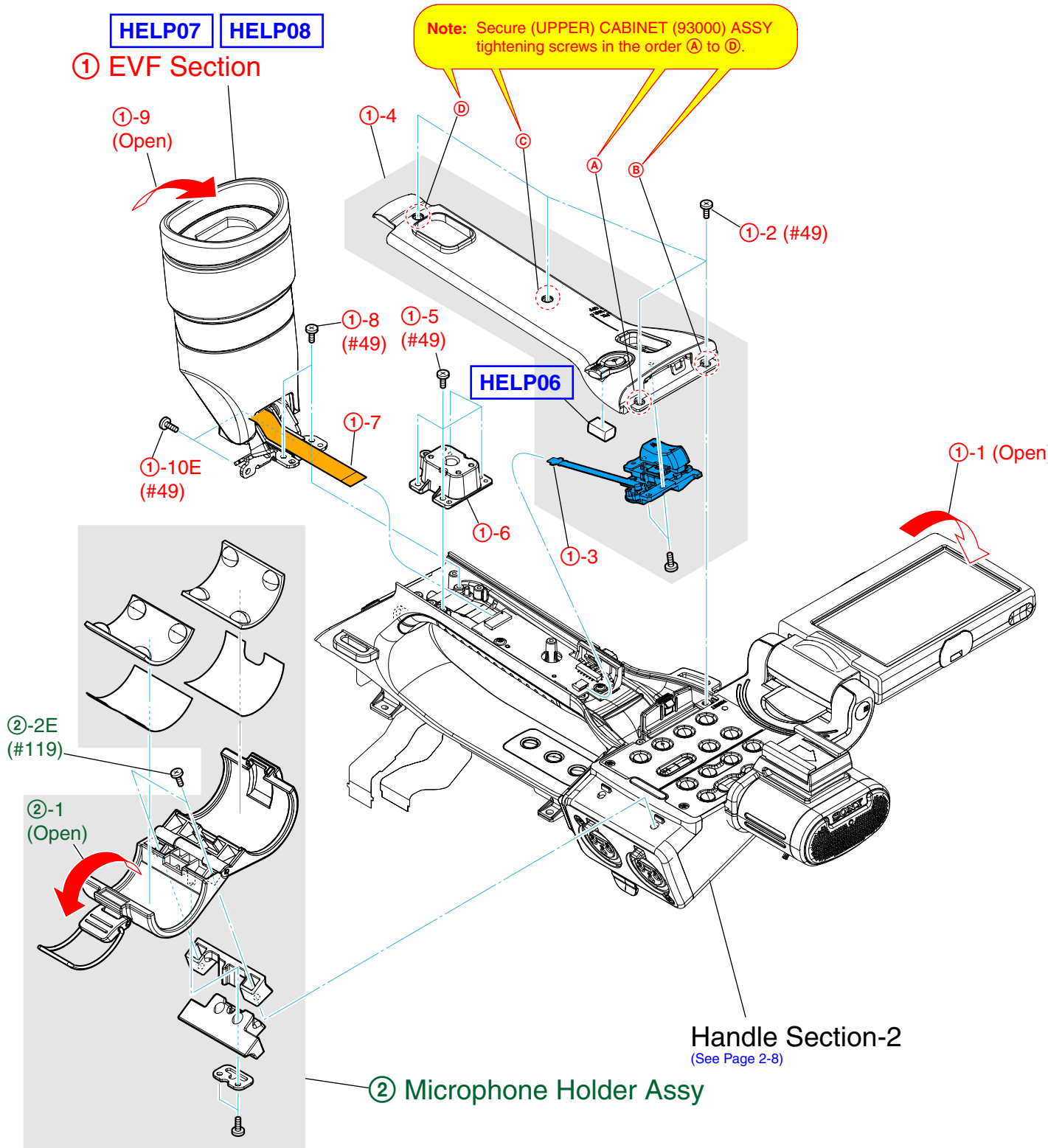
EXPLODED VIEW HARDWARE LIST



2-2-5. HANDLE SECTION-1

Follow the disassembly in the numerical order given.
① EVF Section (①-1 to ①-10)
② Microphone Holder Assy (②-1 to ②-2)

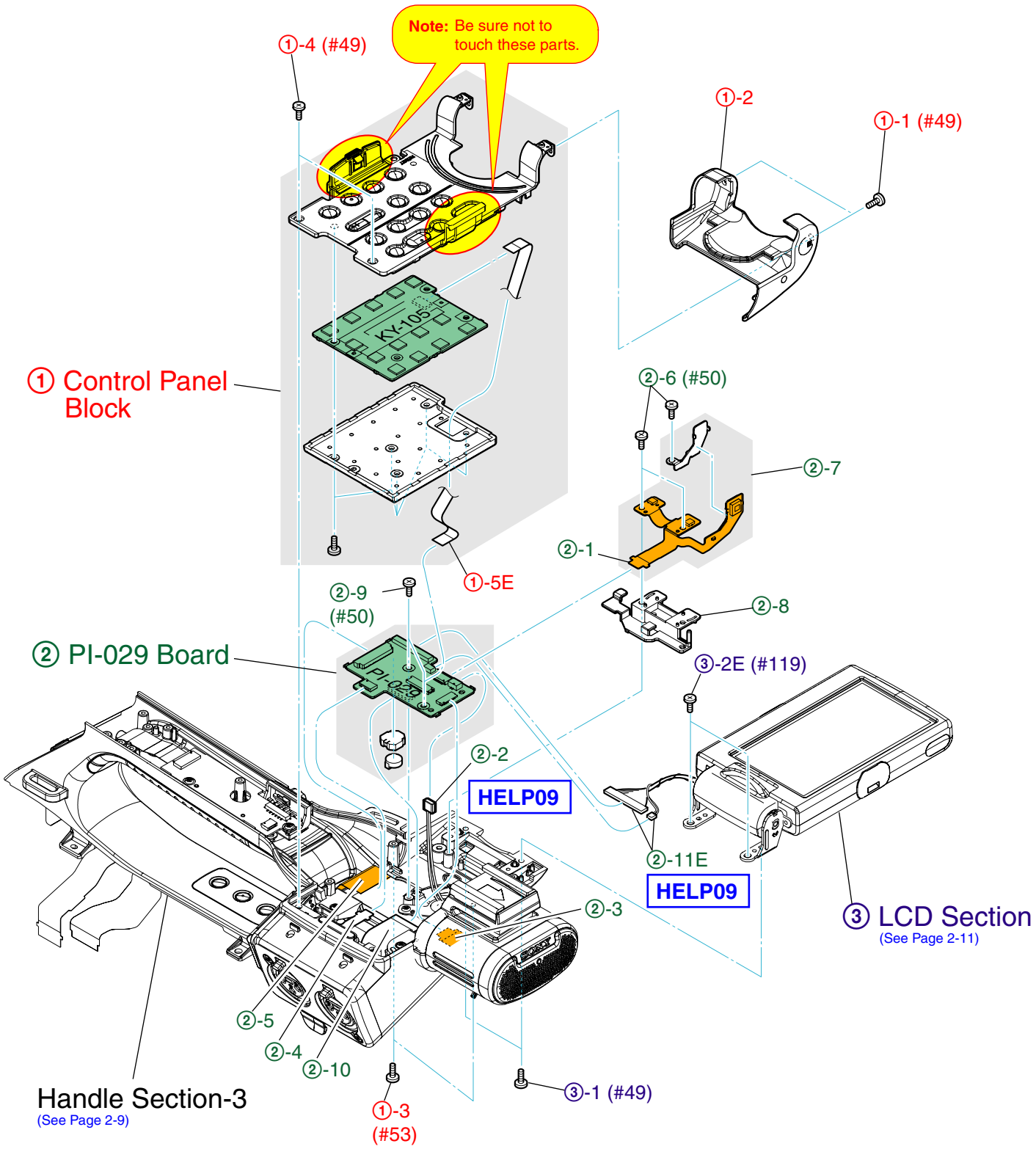
EXPLODED VIEW HARDWARE LIST



2-2-6. HANDLE SECTION-2

EXPLODED VIEW | HARDWARE LIST

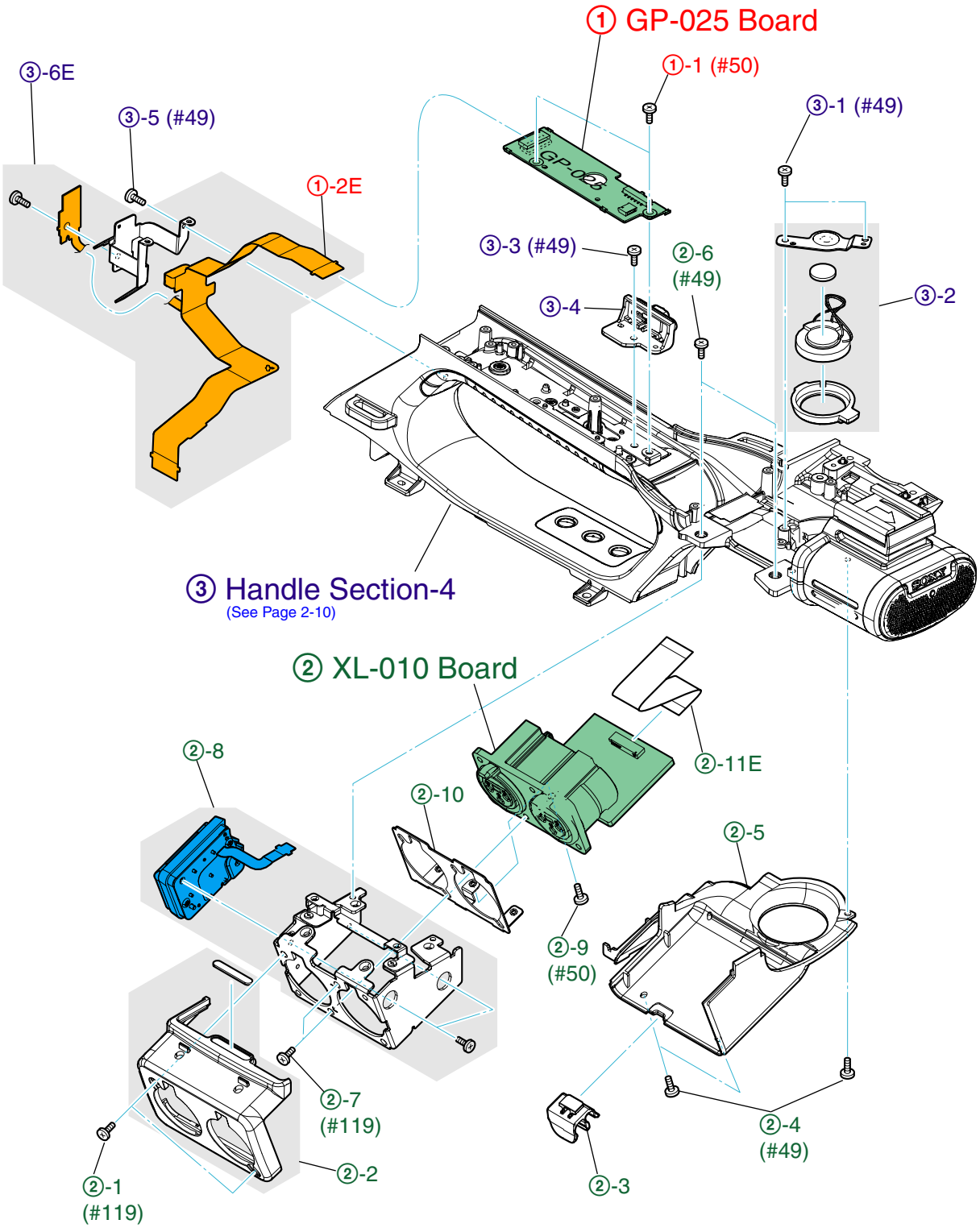
Follow the disassembly in the numerical order given.
① Control Panel Block (①-1 to ①-5)
② PI-029 Board (②-1 to ②-11)
③ LCD Section (③-1 to ③-2)



2-2-7. HANDLE SECTION-3

EXPLODED VIEW HARDWARE LIST

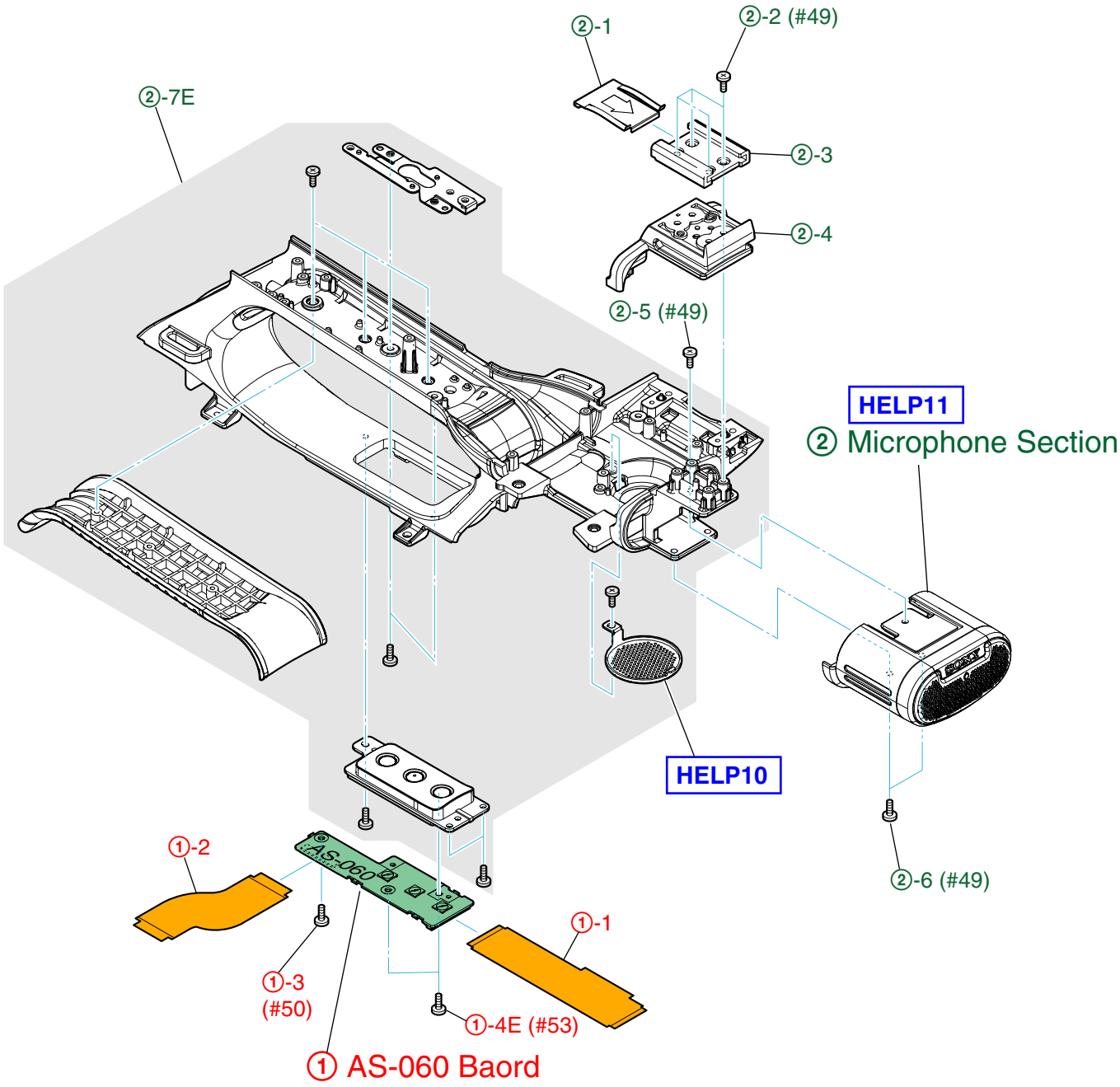
Follow the disassembly in the numerical order given.
① GP-025 Board (①-1 to ①-2)
② XL-010 Board (②-1 to ②-11)
③ Handle Section-4 (③-6 to ③-6)



2-2-8. HANDLE SECTION-4

Follow the disassembly in the numerical order given.
① AS-060 Board (①-1 to ①-4)
② Microphone Section (②-1 to ②-7)

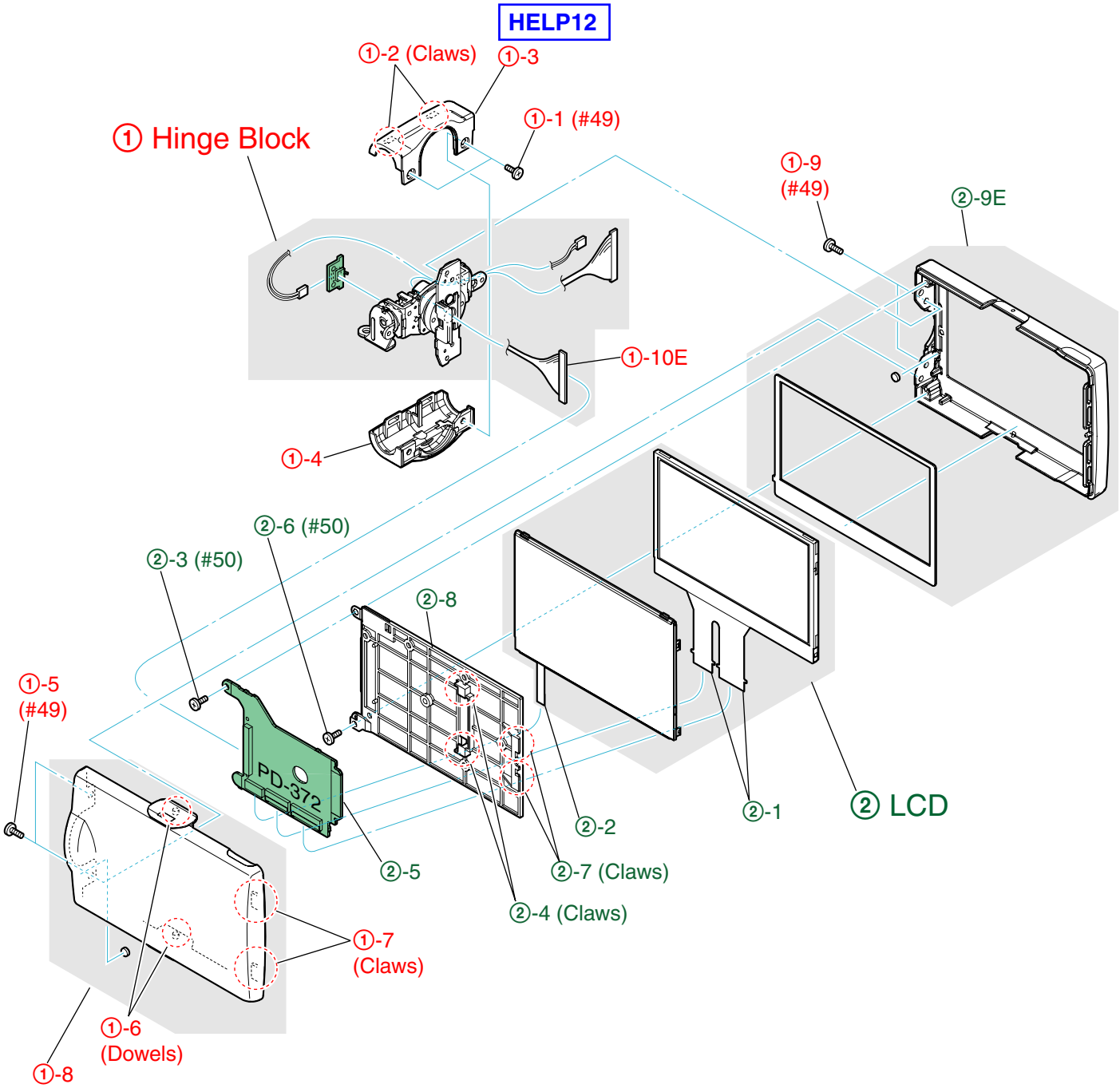
EXPLODED VIEW HARDWARE LIST



2-2-9. LCD SECTION

Follow the disassembly in the numerical order given.
① Hinge Block (①-1 to ①-10)
② LCD (②-1 to ②-9)

EXPLODED VIEW HARDWARE LIST



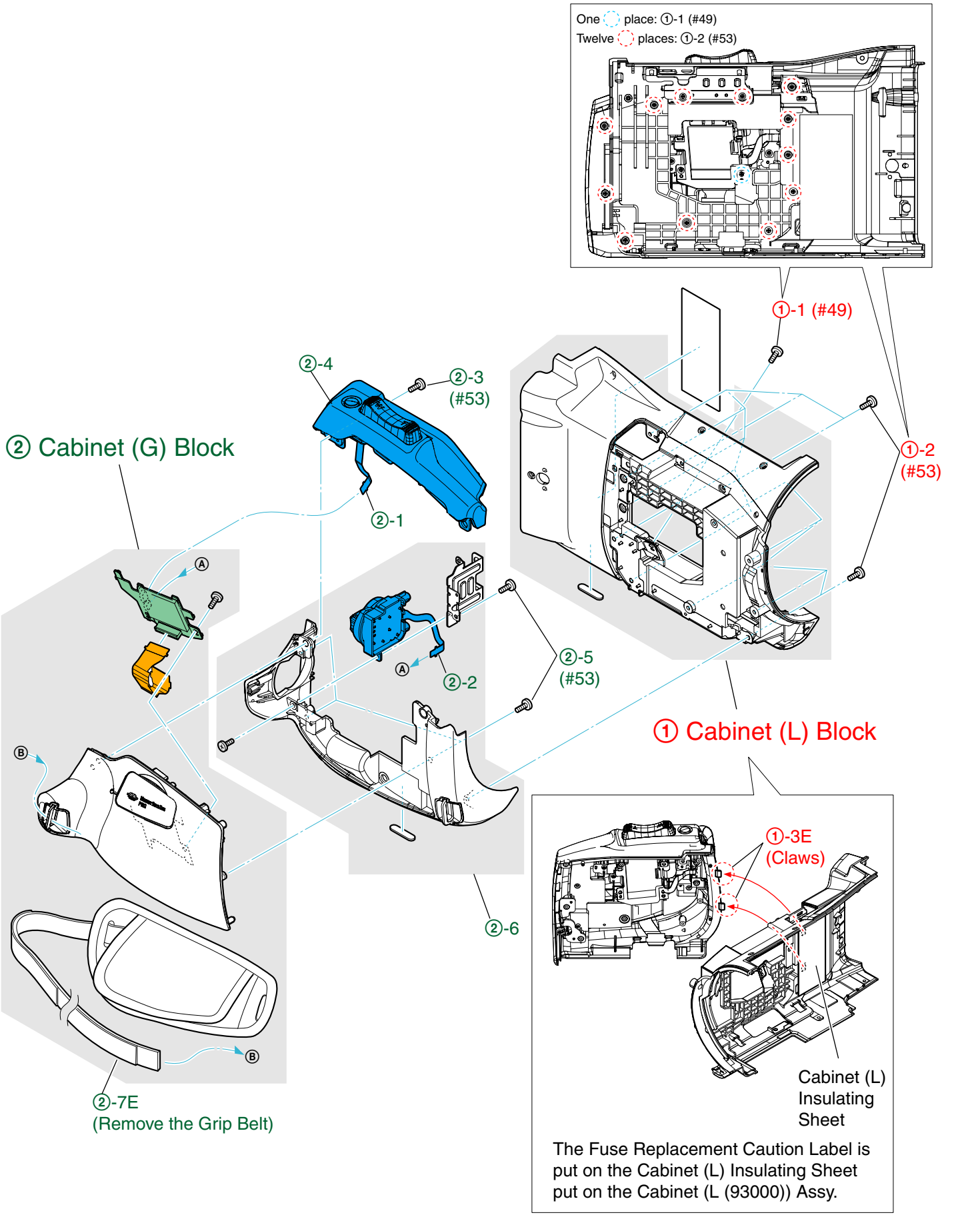
2-2-10. CABINET (L) SECTION

Follow the disassembly in the numerical order given.

① Cabinet (L) Block (①-1 to ①-3)

② Cabinet (G) Block (②-1 to ②-7)

EXPLODED VIEW HARDWARE LIST

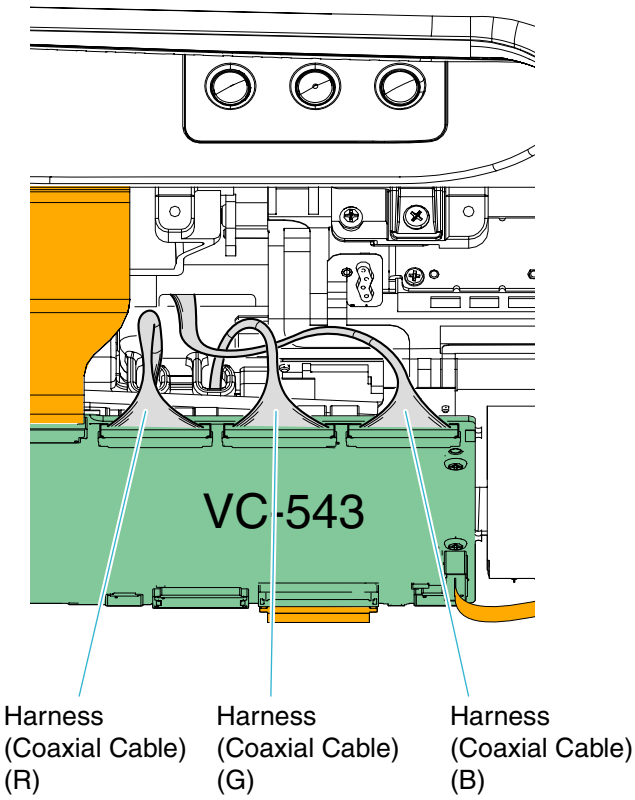


HELP

Sheet attachment positions and procedures of processing the flexible boards/harnesses are shown.

HELP01

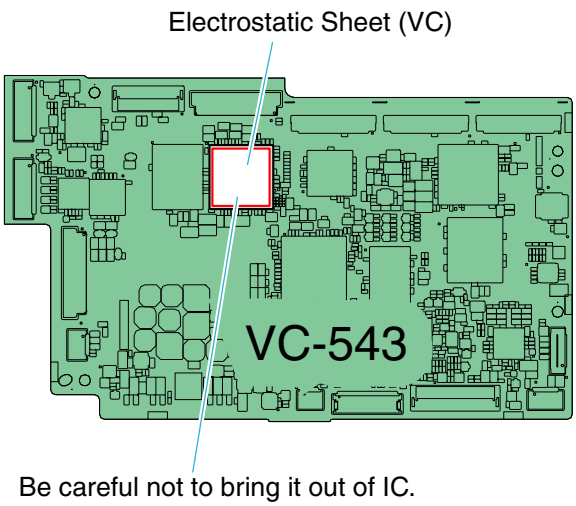
How to arrange Harness (Coaxial Cable).



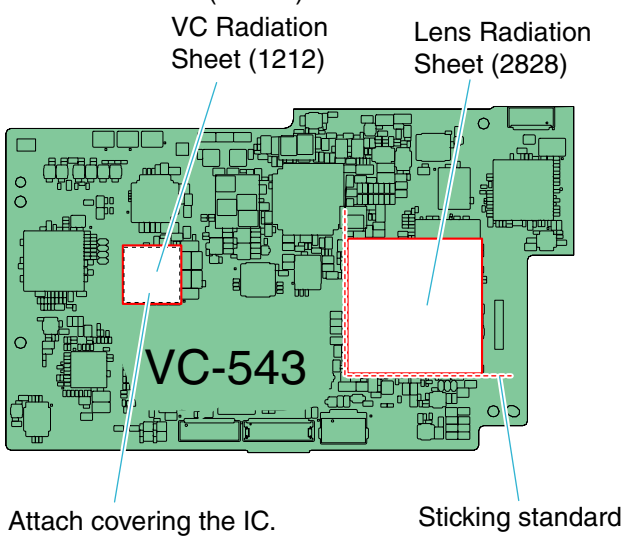
HELP02

Sticking standard of Sheets (to VC-543 Board).

a. VC-543 Board (Side A)

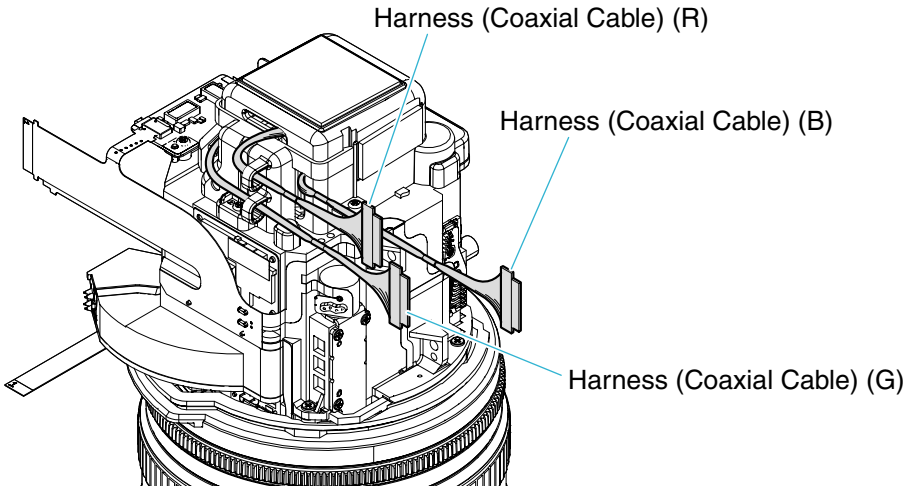


b. VC-543 Board (Side B)



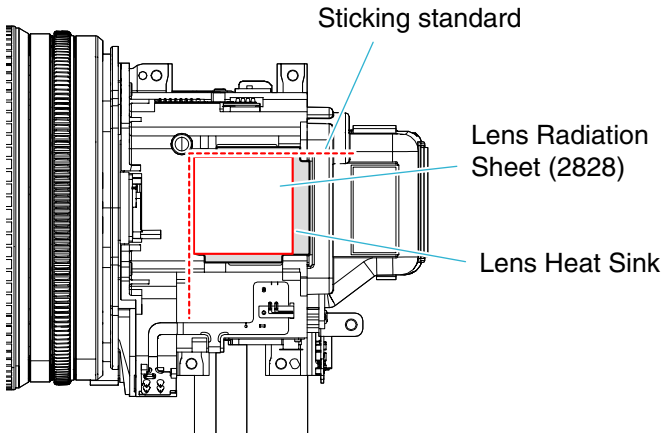
HELP03

How to arrange Harnesses (Coaxial Cable).



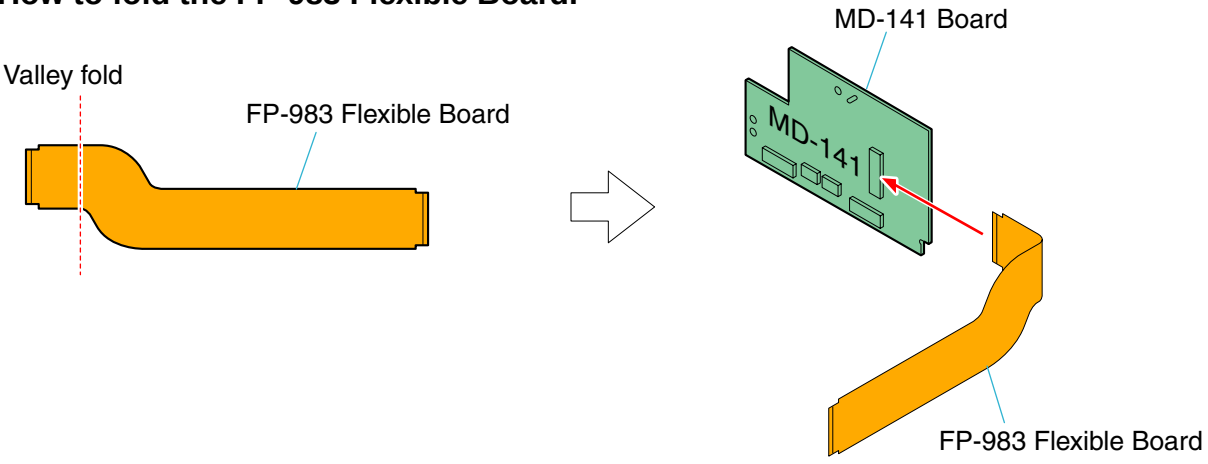
HELP04

Sticking standard of the Lens Radiation Sheet (2828).



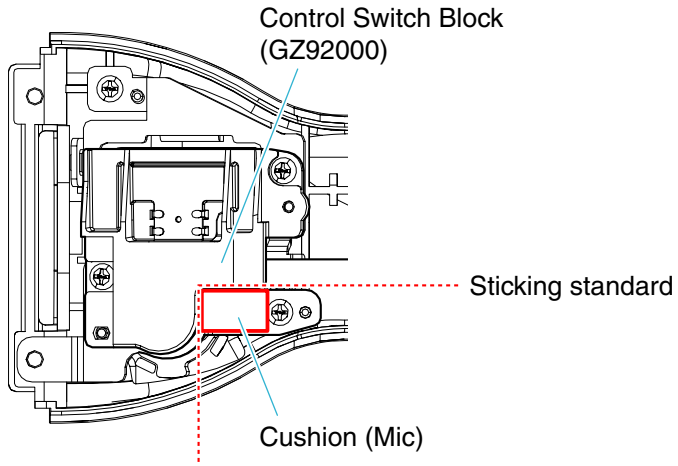
HELP05

How to fold the FP-983 Flexible Board.



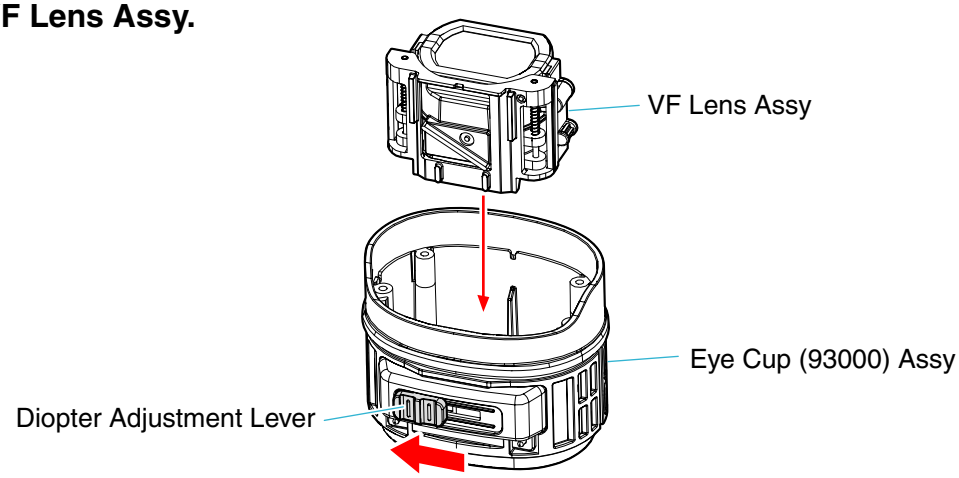
HELP06

Sticking standard of the Cushion (Mic)



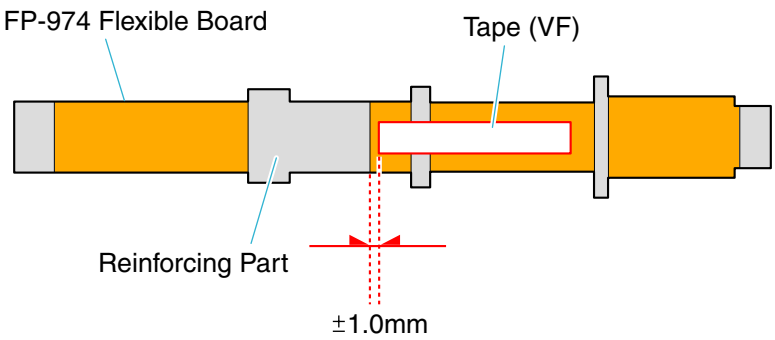
HELP07

Confirm the Diopter Adjustment Lever is on the left side when installing the VF Lens Assy.



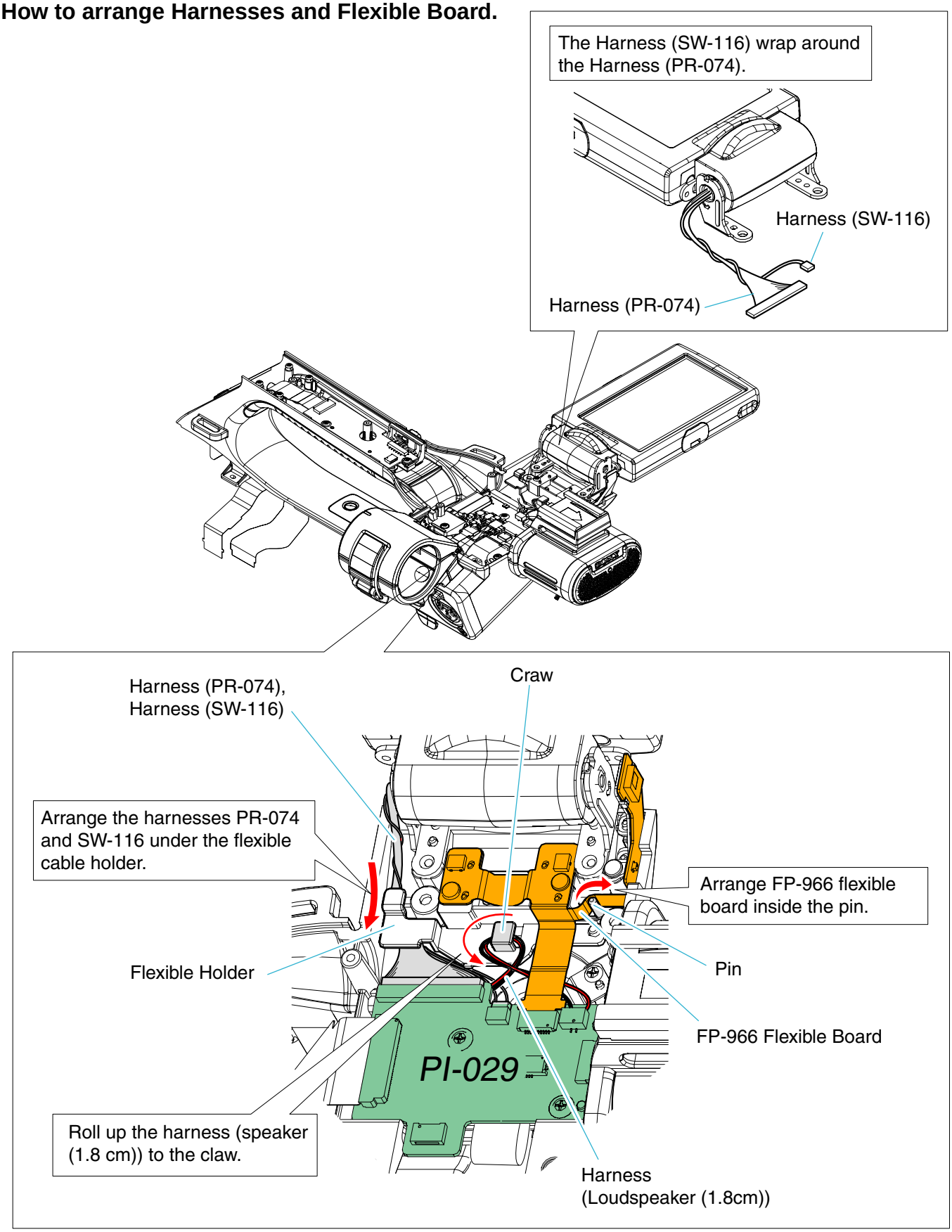
HELP08

Sticking standard of the Tape (VF)



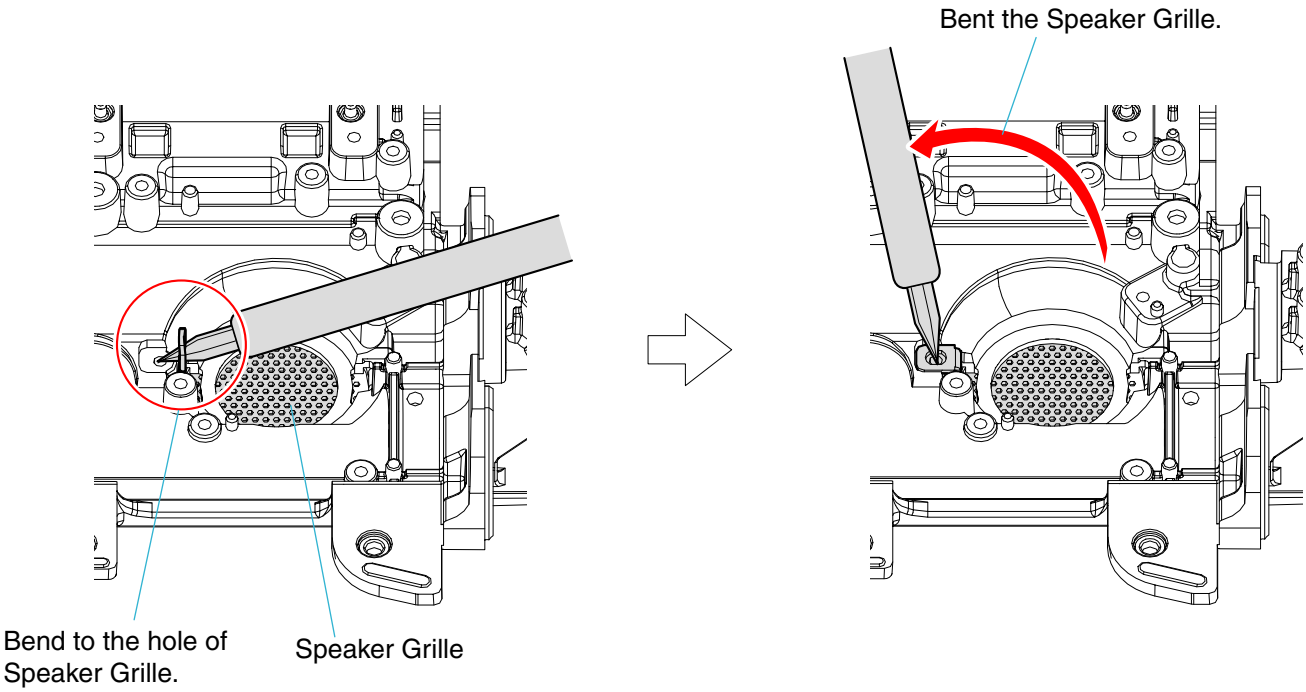
HELP09

How to arrange Harnesses and Flexible Board.


The Harness (SW-116) wrap around the Harness (PR-074).
Harness (SW-116)
Harness (PR-074)
Harness (PR-074), Harness (SW-116)
Craw
Arrange the harnesses PR-074 and SW-116 under the flexible cable holder.
Arrange FP-966 flexible board inside the pin.
Flexible Holder
Pin
FP-966 Flexible Board
PI-029
Roll up the harness (speaker (1.8 cm)) to the claw.
Harness (Loudspeaker (1.8cm))

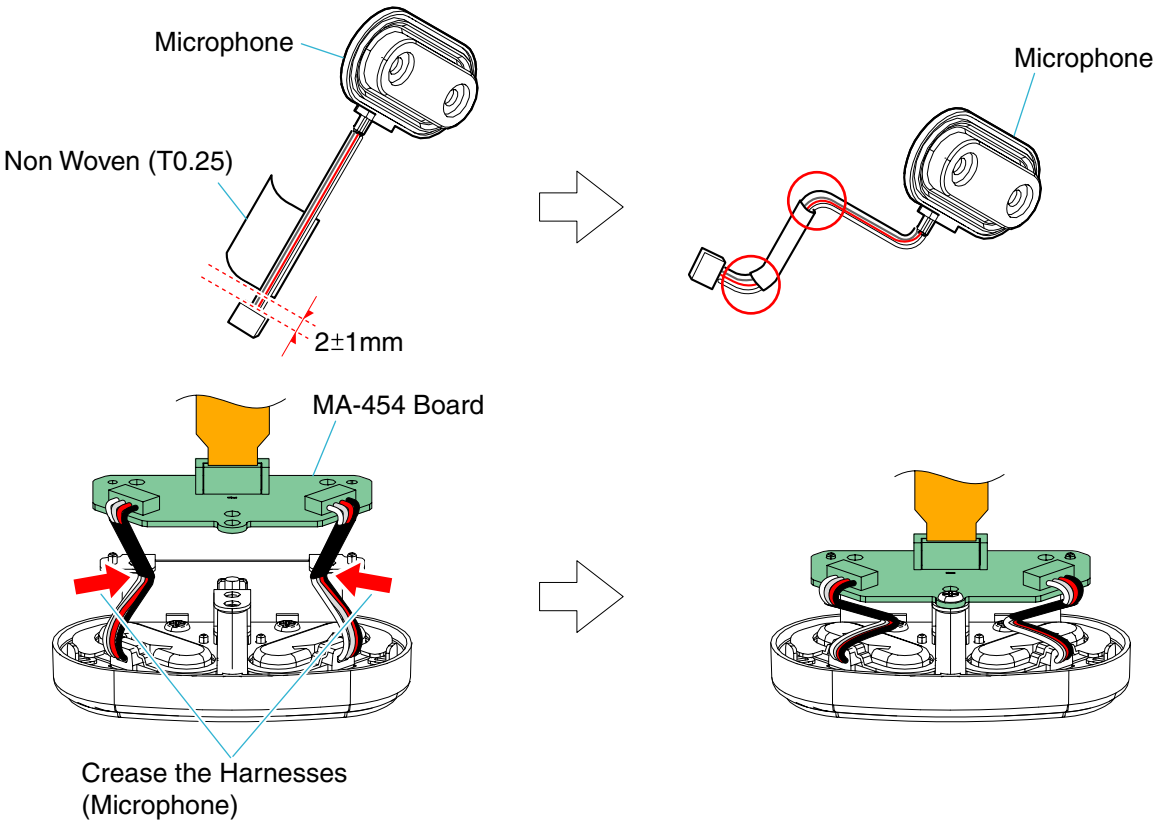
HELP10

How to bent the Speaker Grille.



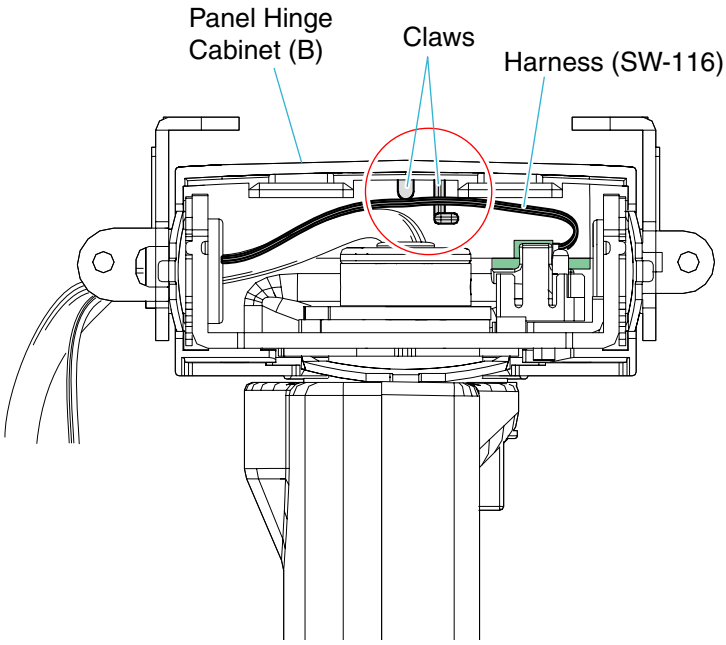
HELP11

Crease the harness (Microphone) two points as shown in the figure.



HELP12

How to arrange Harnesses (SW-116).



3. BLOCK DIAGRAMS

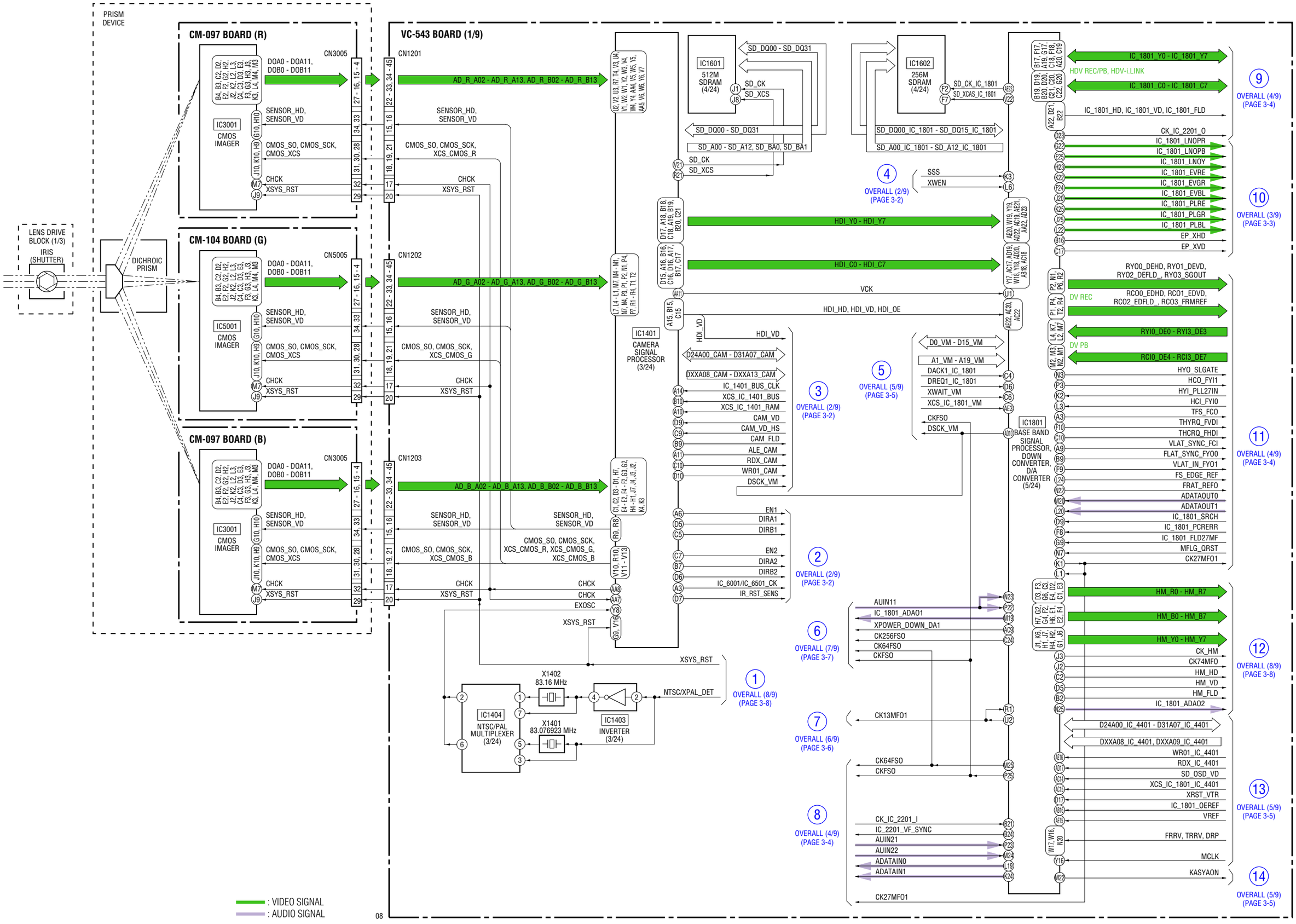
Link

- OVERALL BLOCK DIAGRAM (1/9)
- OVERALL BLOCK DIAGRAM (2/9)
- OVERALL BLOCK DIAGRAM (3/9)
- OVERALL BLOCK DIAGRAM (4/9)
- OVERALL BLOCK DIAGRAM (5/9)
- OVERALL BLOCK DIAGRAM (6/9)
- OVERALL BLOCK DIAGRAM (7/9)
- OVERALL BLOCK DIAGRAM (8/9)
- OVERALL BLOCK DIAGRAM (9/9)
- POWER BLOCK DIAGRAM (1/4)
- POWER BLOCK DIAGRAM (2/4)
- POWER BLOCK DIAGRAM (3/4)
- POWER BLOCK DIAGRAM (4/4)

3. BLOCK DIAGRAMS

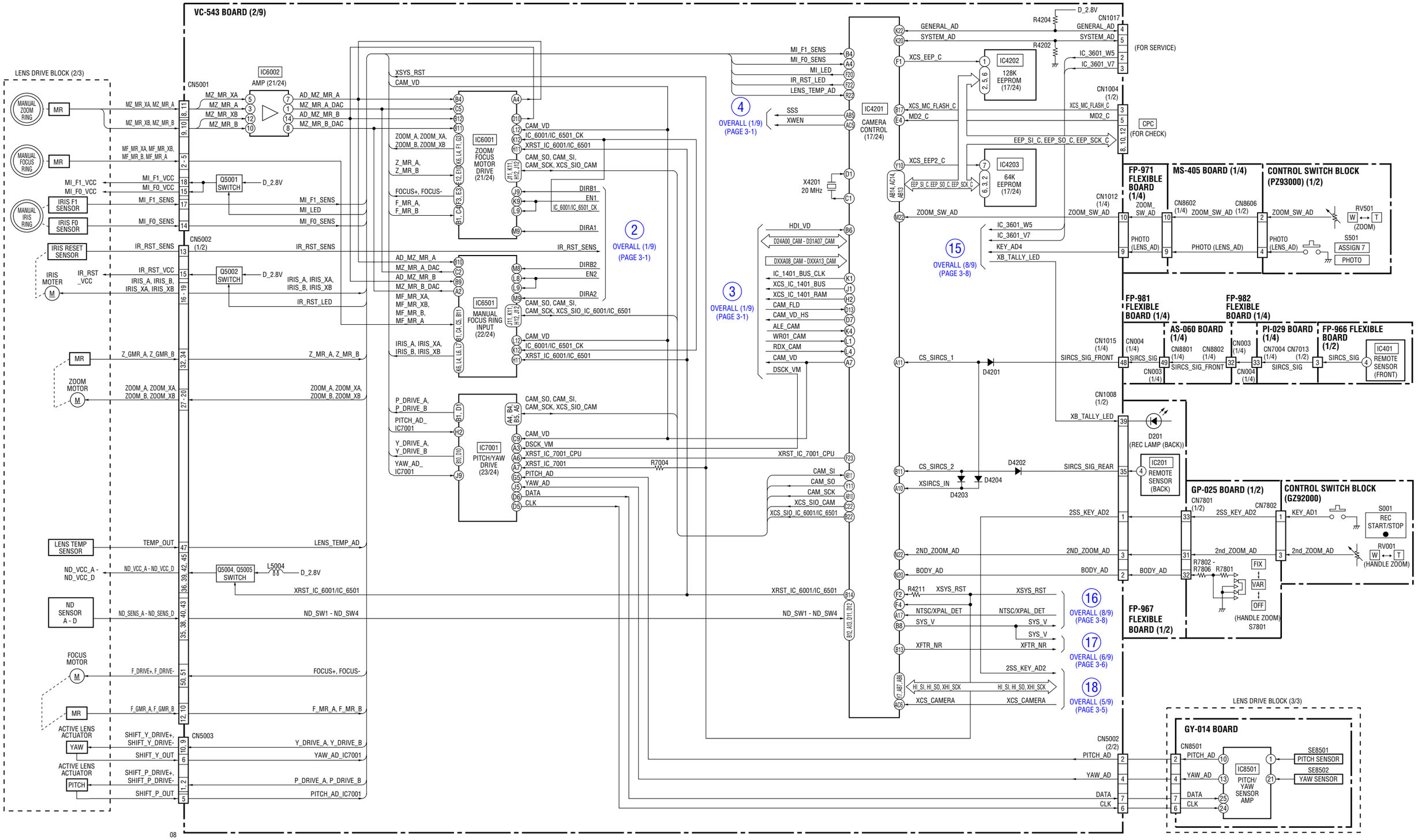
3-1. OVERALL BLOCK DIAGRAM (1/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



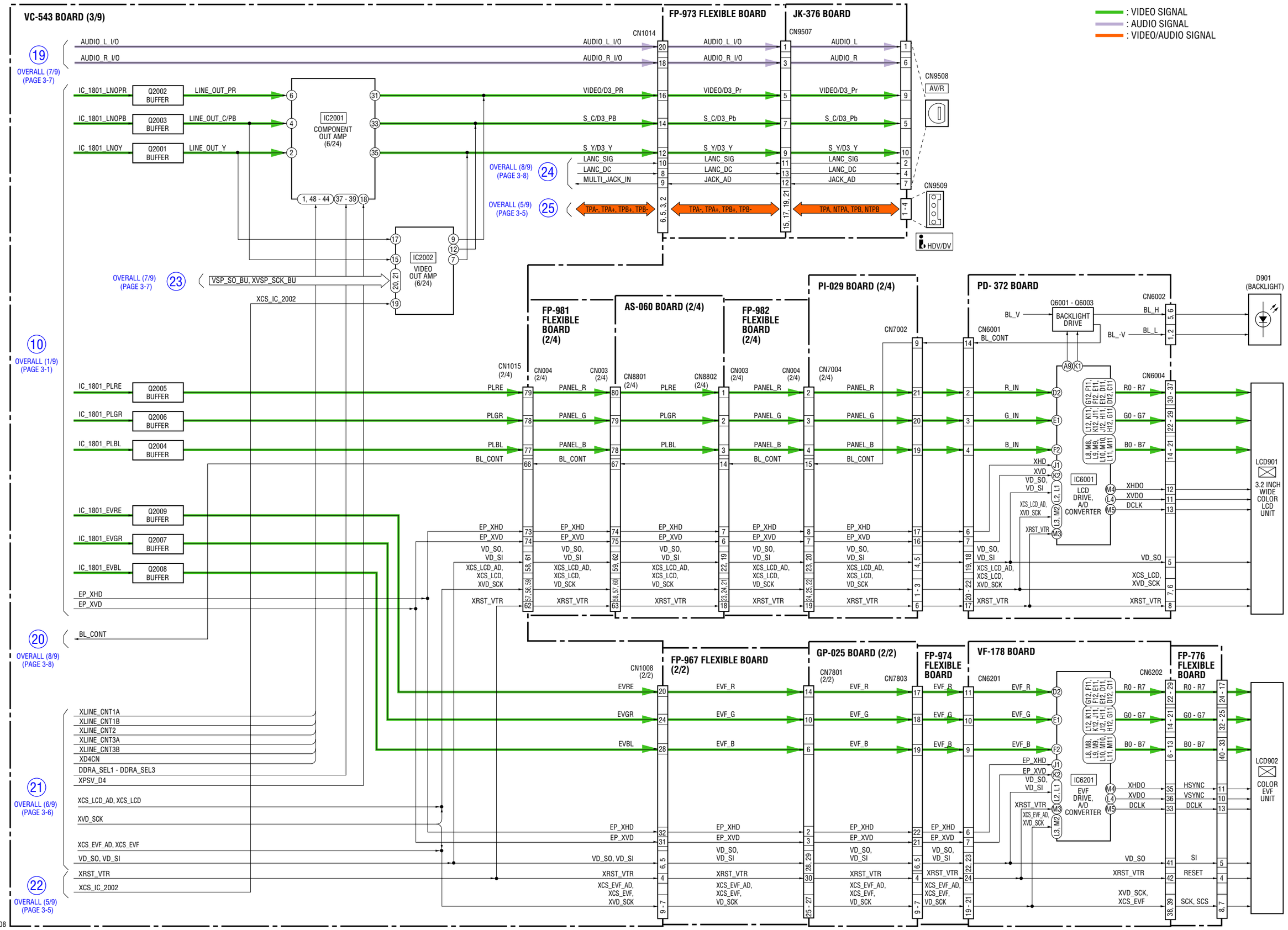
3-2. OVERALL BLOCK DIAGRAM (2/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



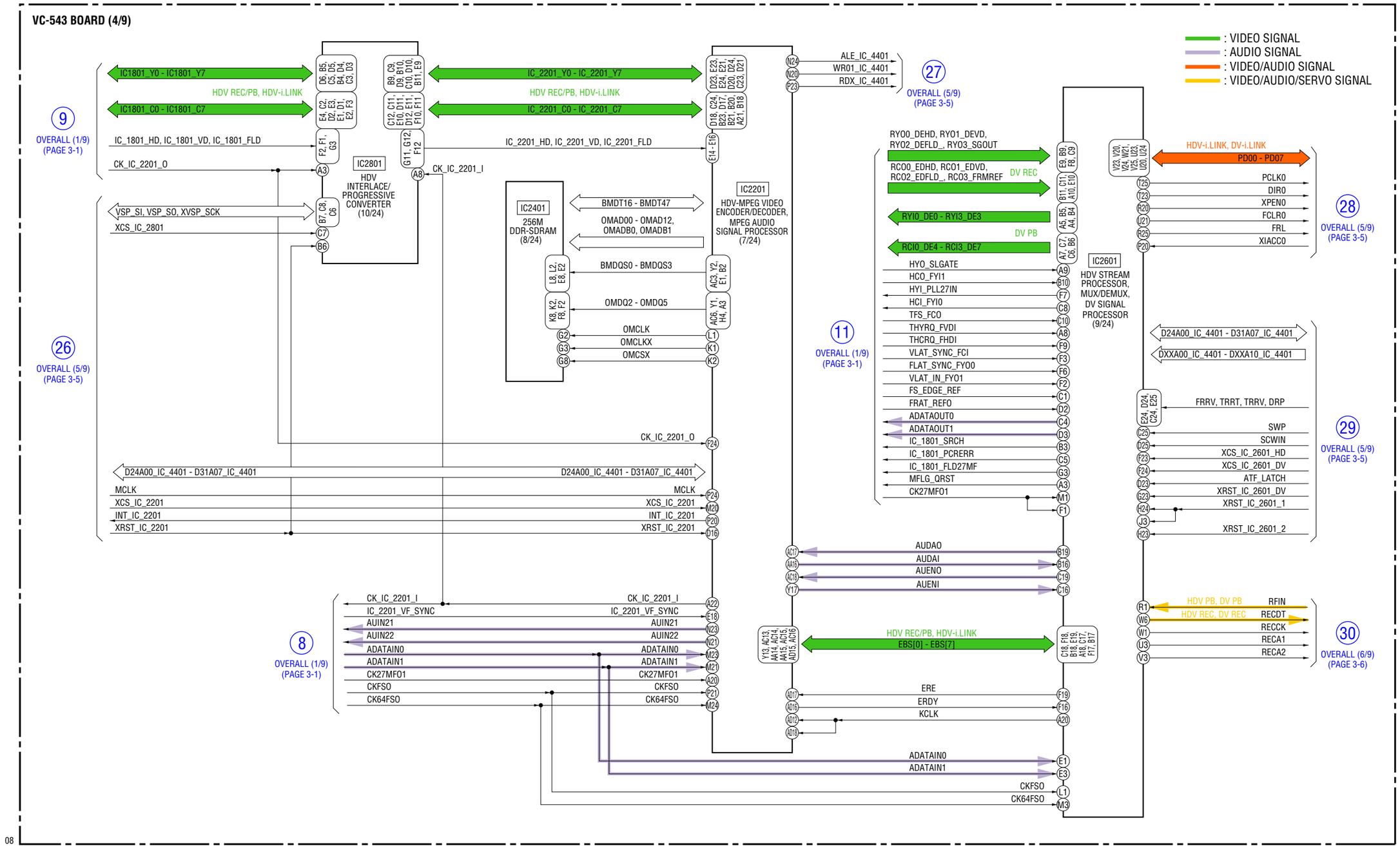
3-3. OVERALL BLOCK DIAGRAM (3/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



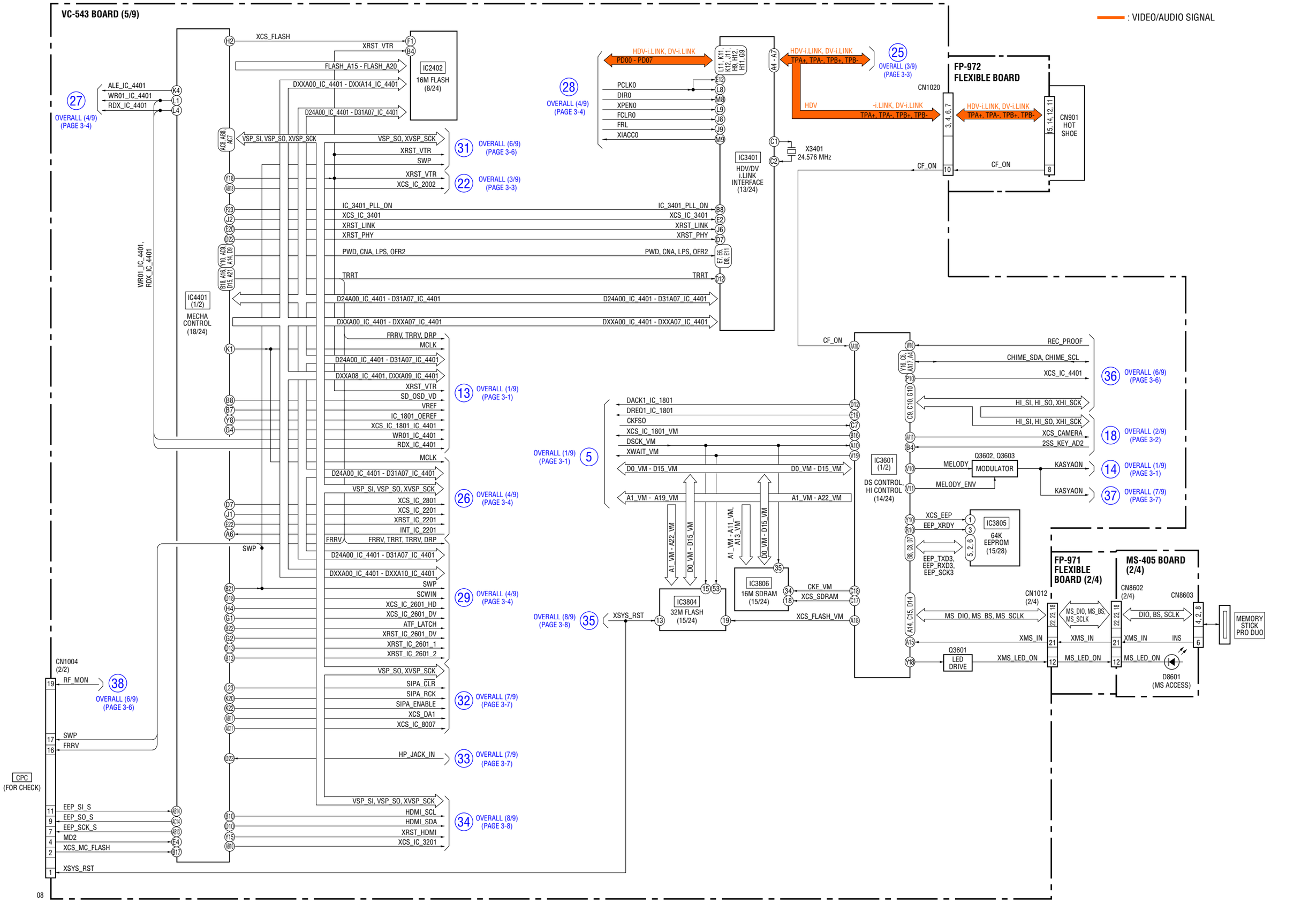
3-4. OVERALL BLOCK DIAGRAM (4/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



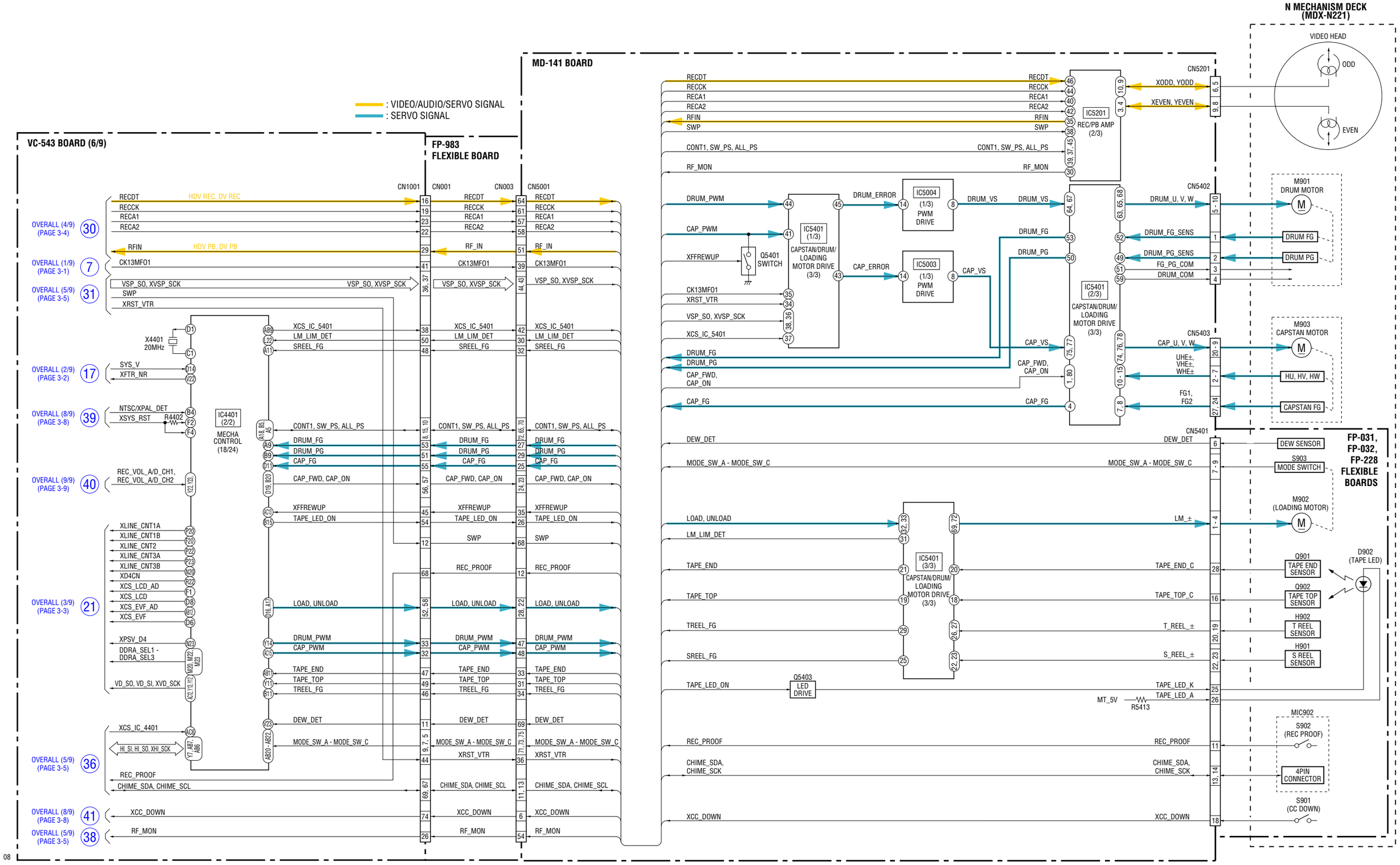
3-5. OVERALL BLOCK DIAGRAM (5/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



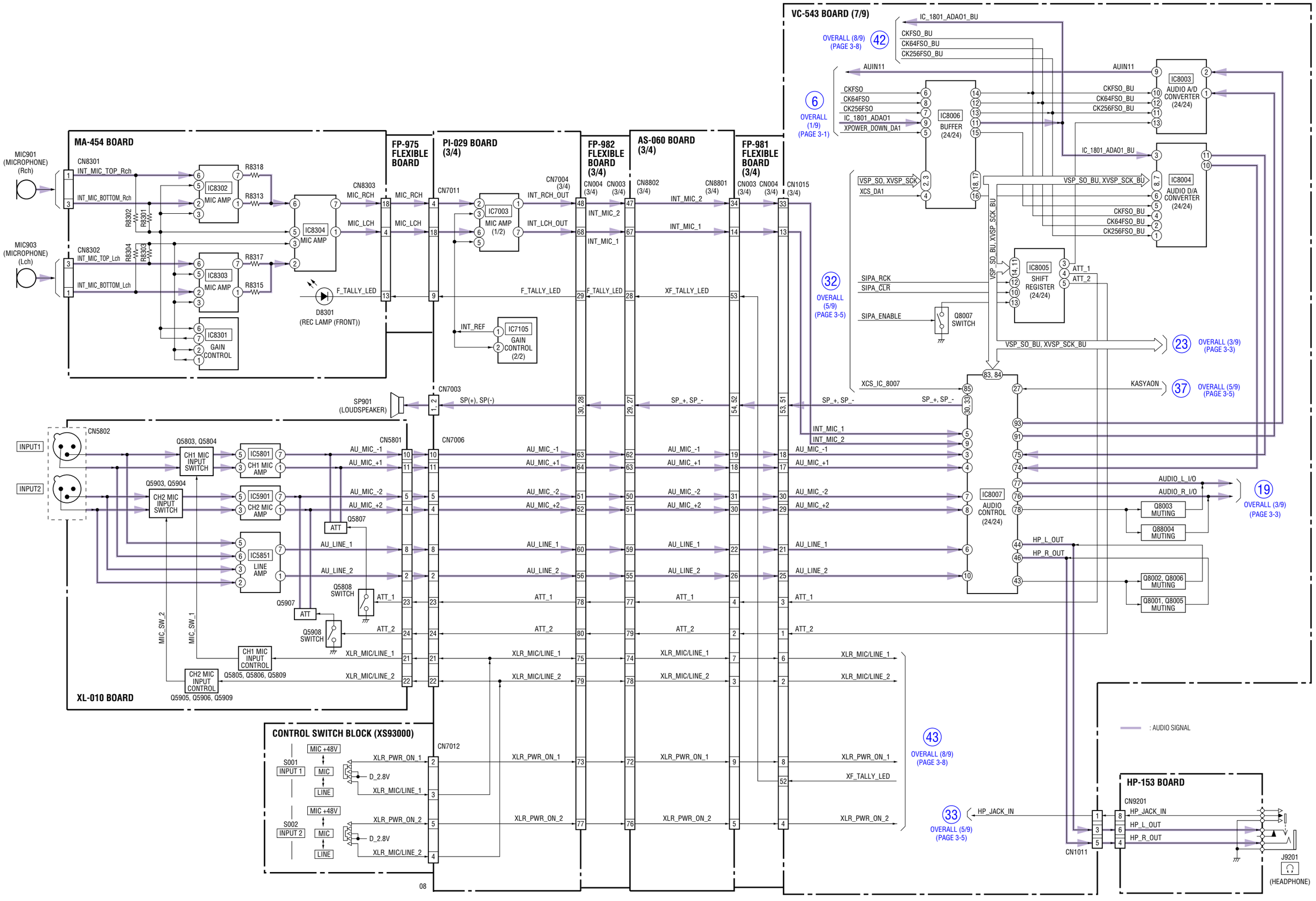
3-6. OVERALL BLOCK DIAGRAM (6/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



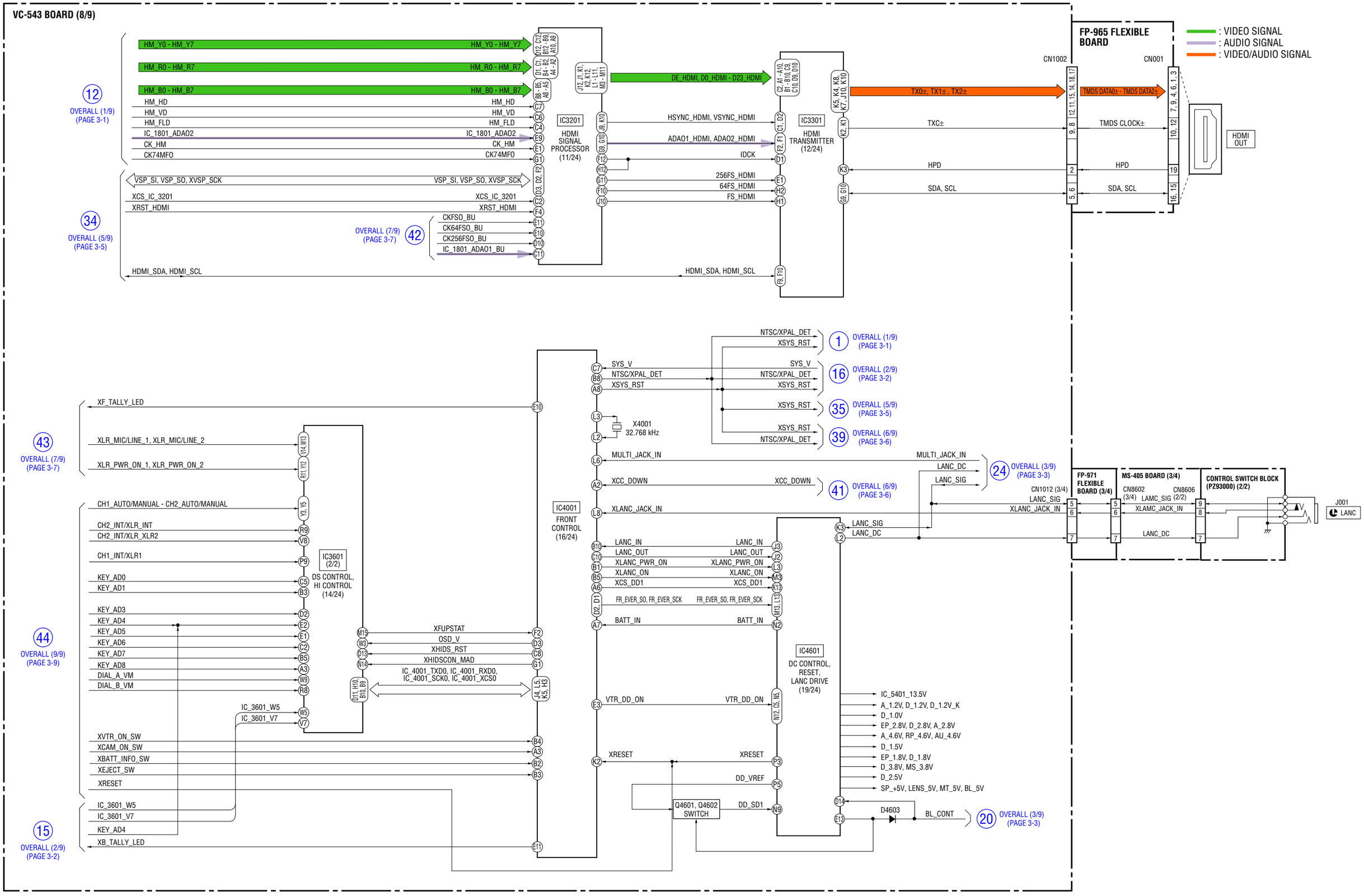
3-7. OVERALL BLOCK DIAGRAM (7/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



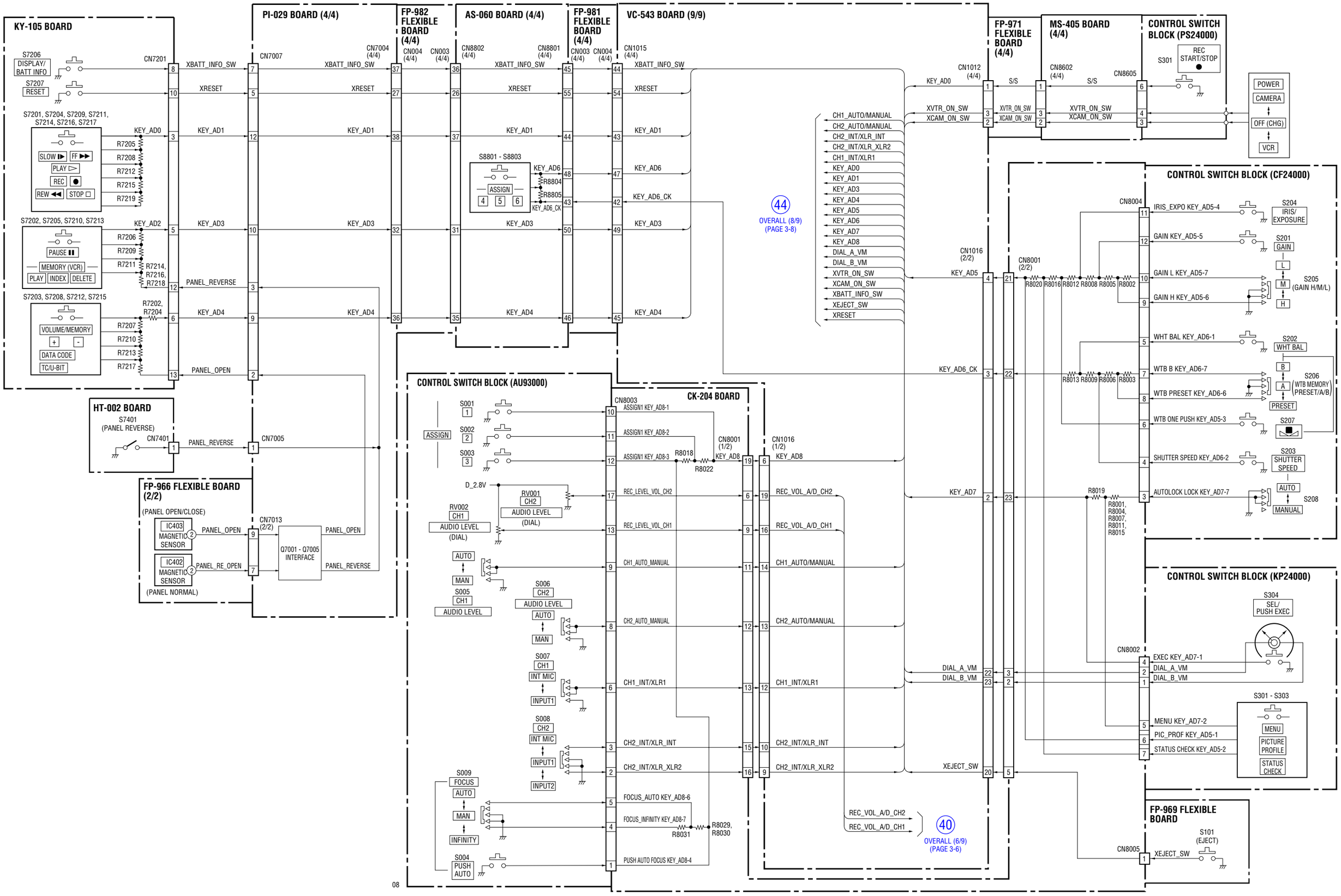
3-8. OVERALL BLOCK DIAGRAM (8/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



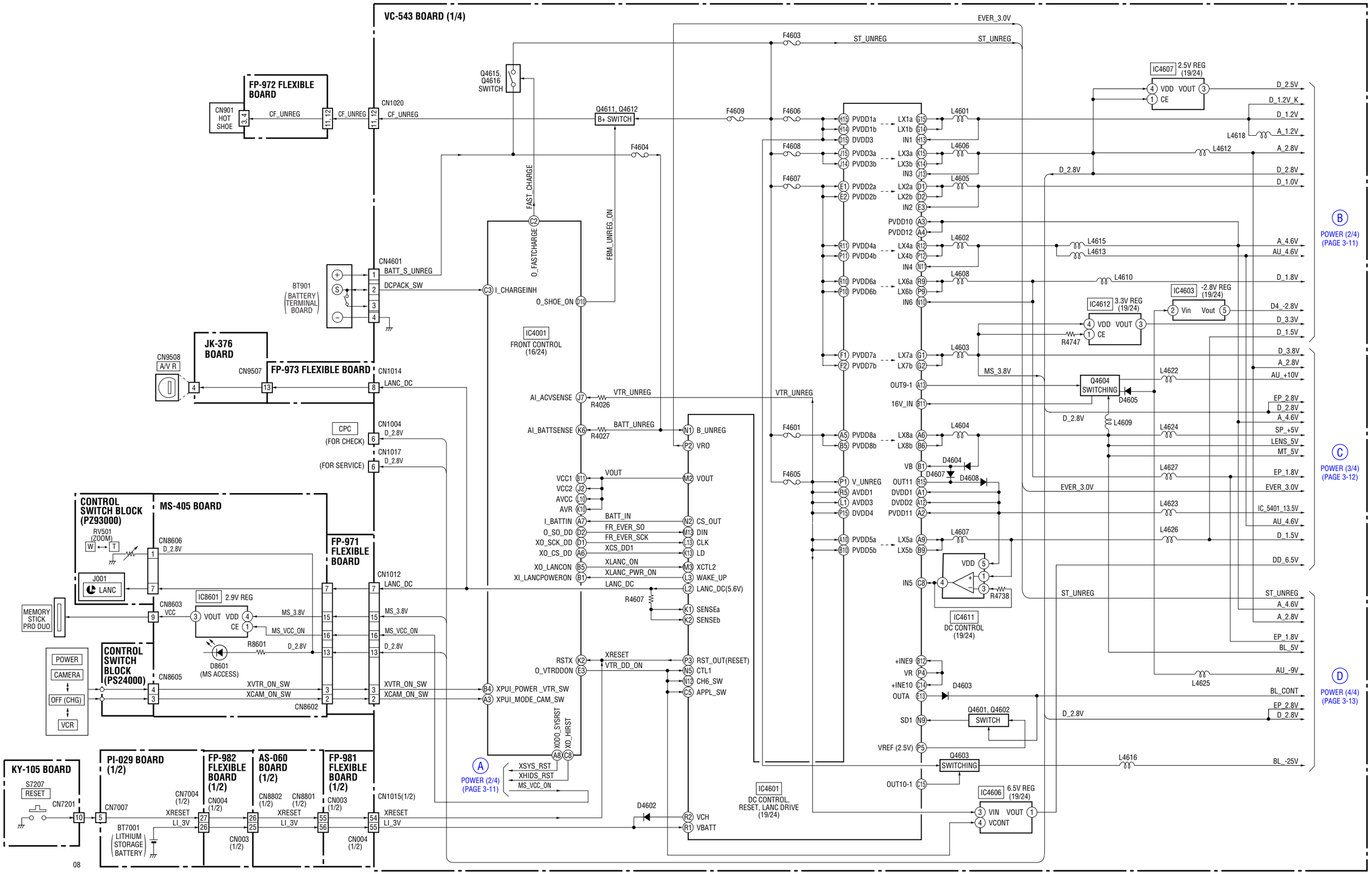
3-9. OVERALL BLOCK DIAGRAM (9/9)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



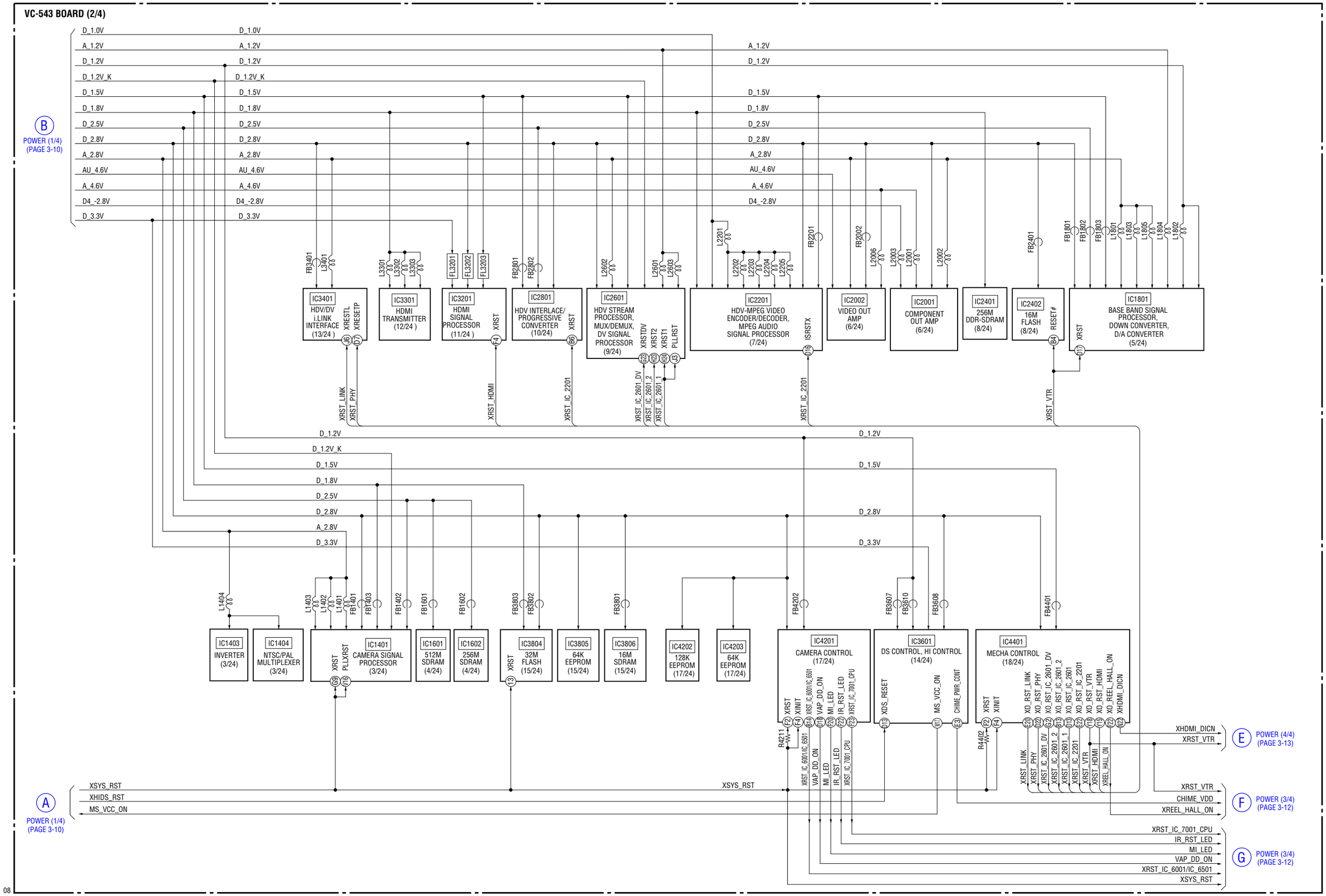
3-10. POWER BLOCK DIAGRAM (1/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



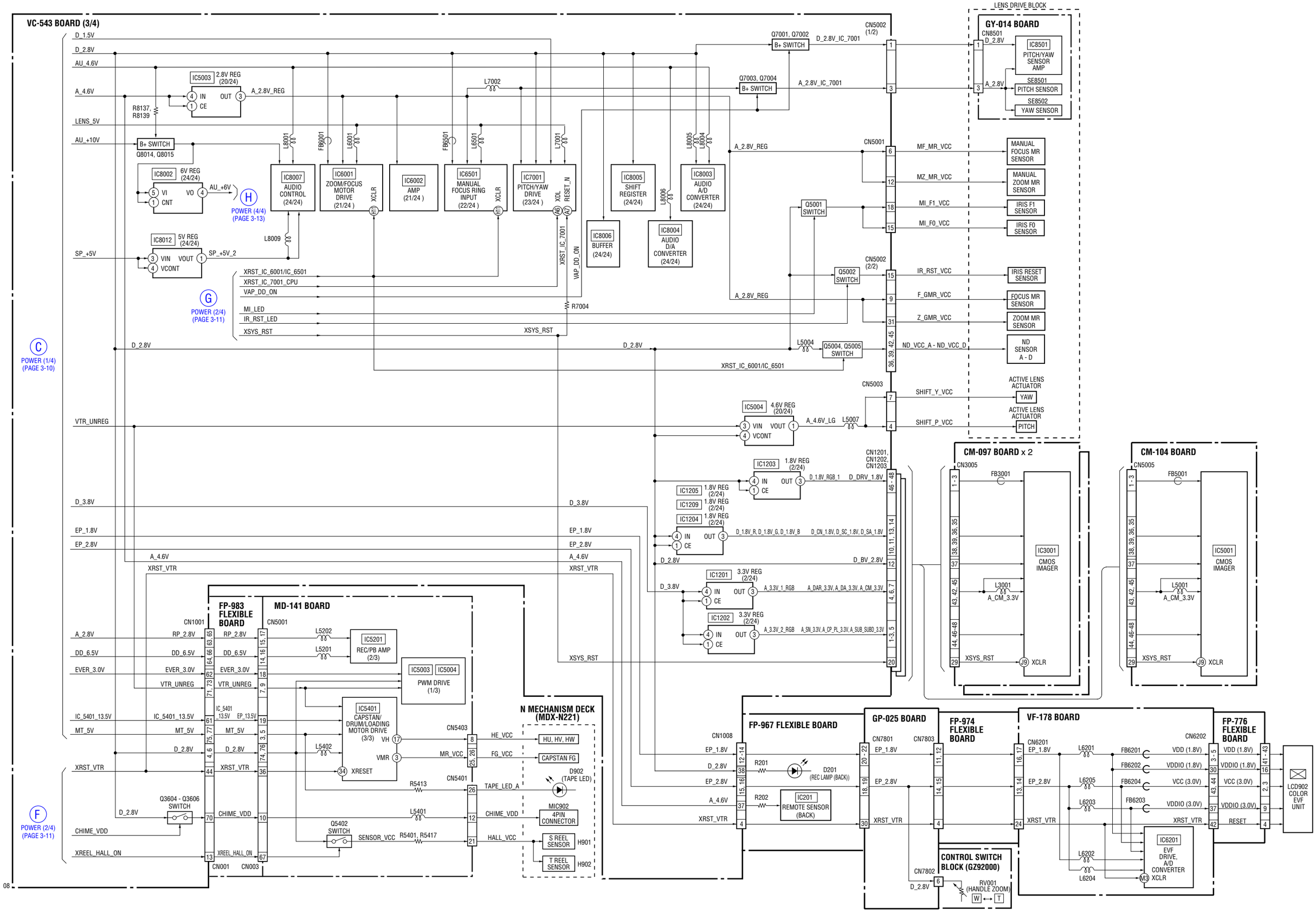
3-11. POWER BLOCK DIAGRAM (2/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



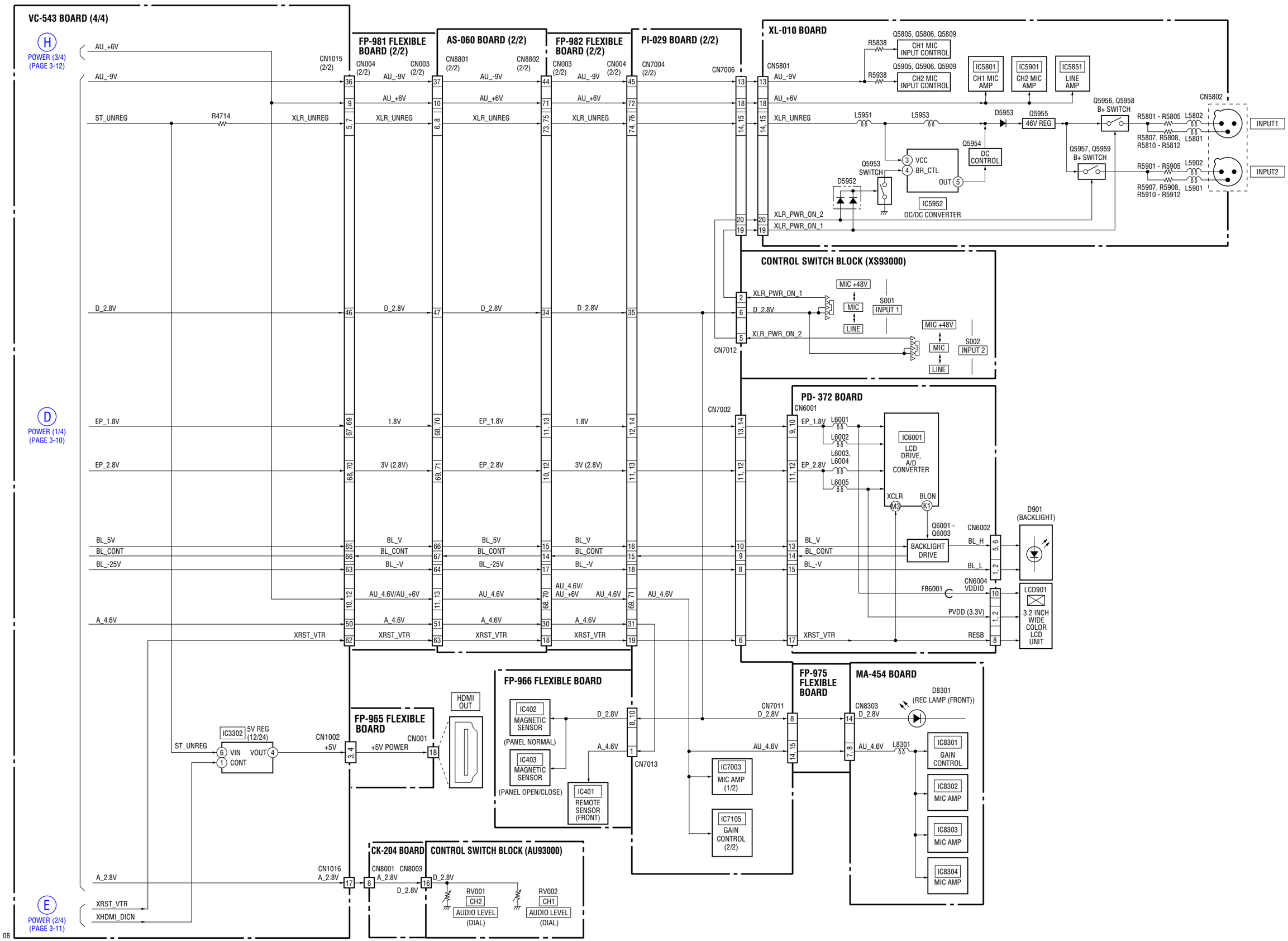
3-12. POWER BLOCK DIAGRAM (3/4)

( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



3-13. POWER BLOCK DIAGRAM (4/4)

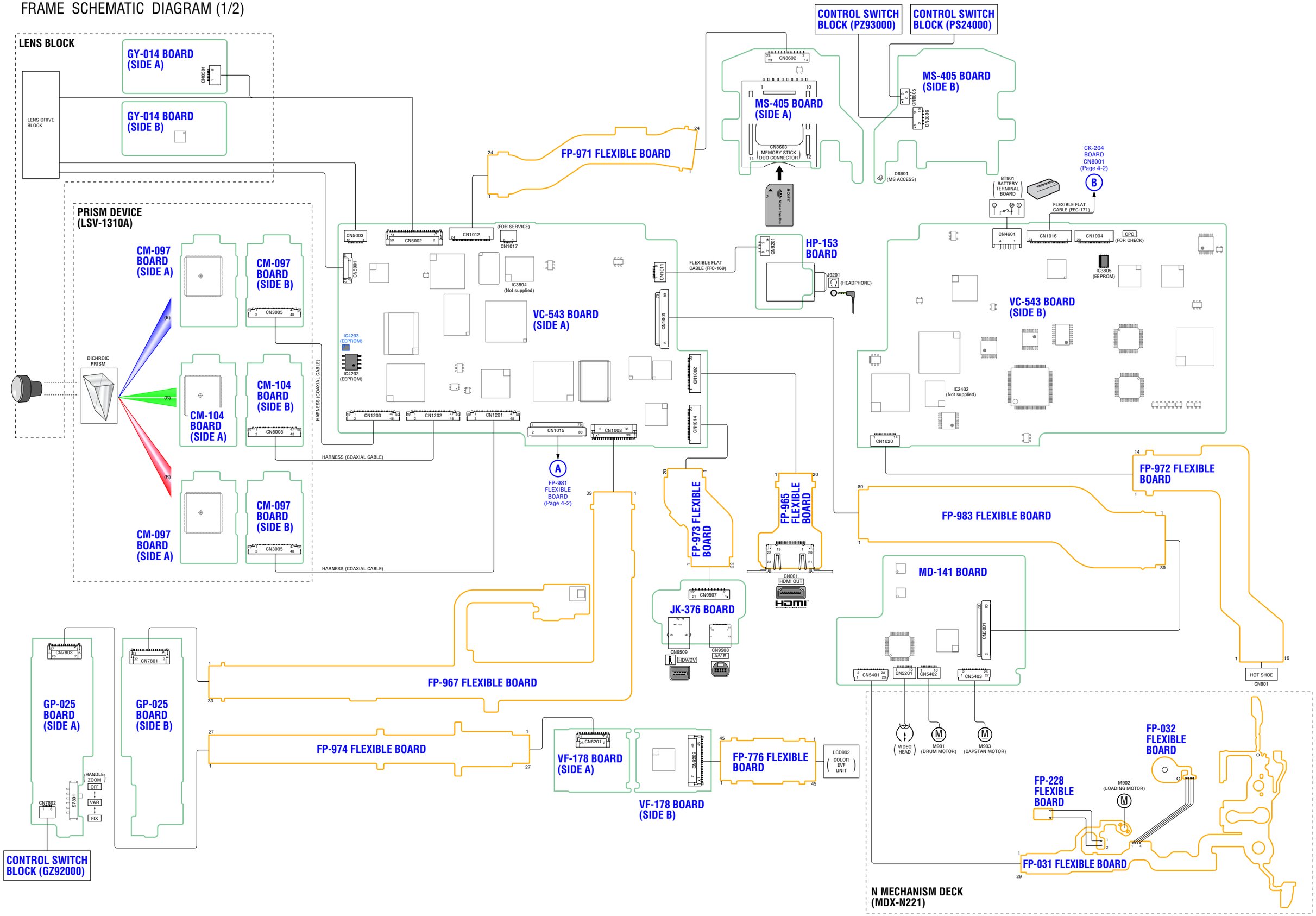
( ) : Number in parenthesis ( ) indicates the division number of schematic diagram where the component is located.



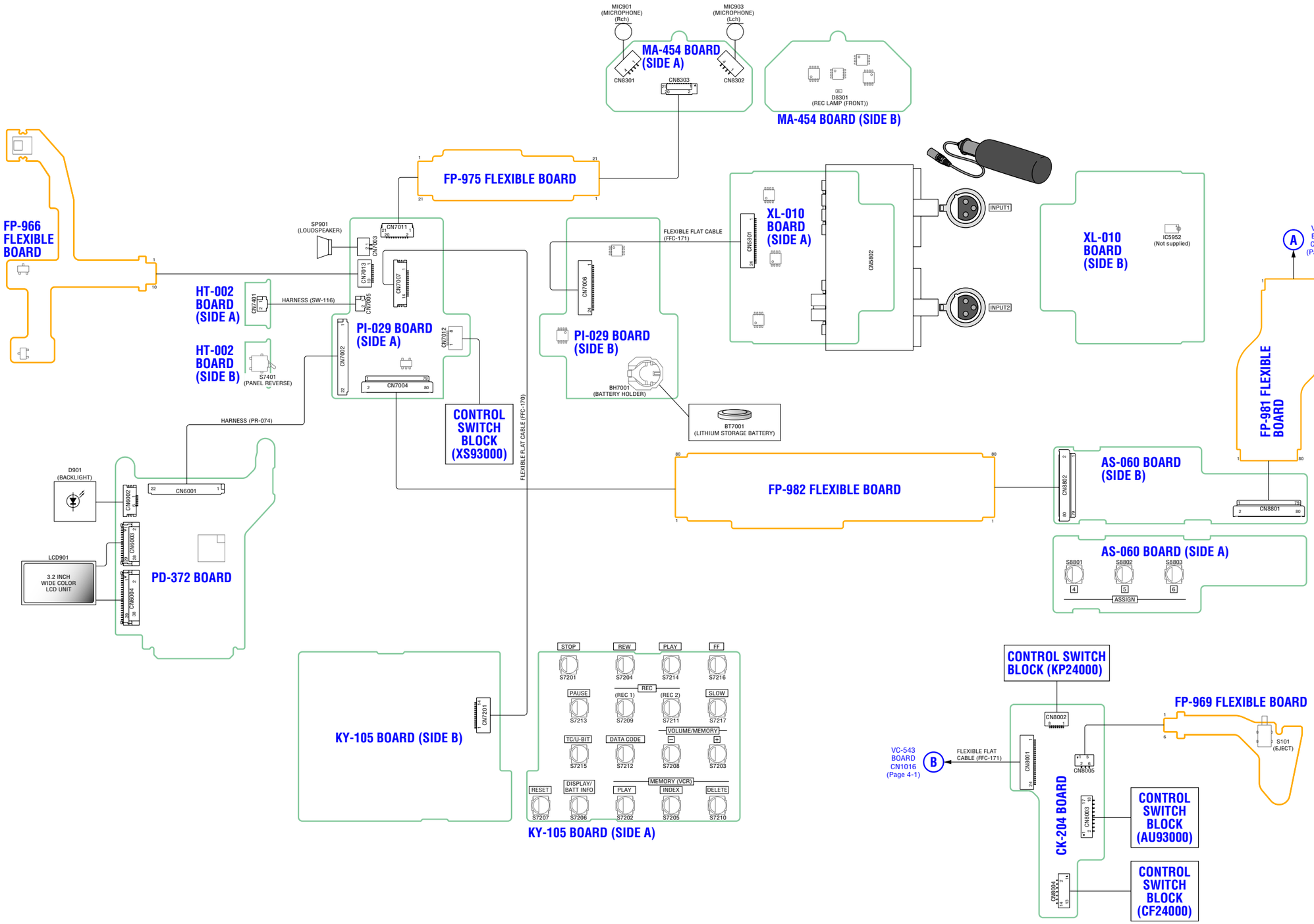
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

FRAME SCHEMATIC DIAGRAM (1/2)



FRAME SCHEMATIC DIAGRAM (2/2)



4-2. SCHEMATIC DIAGRAMS

TO (2/2)

Link

CM-097 BOARD (CMOS IMAGER (B/R))	VC-543 BOARD (17/24) (CAMERA CONTROL, EEPROM)
CM-104 BOARD (CMOS IMAGER (G))	VC-543 BOARD (18/24) (MECHA CONTROL)
VC-543 BOARD (1/24) (CONNECTOR)	VC-543 BOARD (19/24) (DC/DC CONVERTER)
VC-543 BOARD (2/24) (REGULATOR)	VC-543 BOARD (20/24) (LENS CONNECTOR)
VC-543 BOARD (3/24) (CAMERA SIGNAL PROCESS)	VC-543 BOARD (21/24) (ZOOM/FOCUS MOTOR DRIVE)
VC-543 BOARD (4/24) (SDRAM)	VC-543 BOARD (22/24) (LENS DRIVE)
VC-543 BOARD (5/24) (BASE BAND SIGNAL PROCESS)	VC-543 BOARD (23/24) (PITCH/YAW DRIVE)
VC-543 BOARD (6/24) (COMPONENT OUT AMP, VIDEO OUT AMP)	VC-543 BOARD (24/24) (AUDIO CONTROL)
VC-543 BOARD (7/24) (HDV-MPEG VIDEO ENCODER/DECODER)	PI-029 BOARD (1/2) (PANEL RELAY CONNECTOR)
VC-543 BOARD (8/24) (SDRAM, FLASH)	PI-029 BOARD (2/2) (EXT MIC AMP)
VC-543 BOARD (9/24) (HDV STREAM PROCESS)	PD-372 BOARD (LCD DRIVE, A/D CONVERTER)
VC-543 BOARD (10/24) (HDV INTERLACE/PROGRESSIVE CONVERTER)	VF-178 BOARD (EVF DRIVE, A/D CONVERTER)
VC-543 BOARD (11/24) (HDMI SIGNAL PROCESS)	MD-141 BOARD (1/3) (CAPSTAN/DRUM MOTOR DRIVE)
VC-543 BOARD (12/24) (HDMI TRANSMITTER)	MD-141 BOARD (2/3) (REC/PB AMP)
VC-543 BOARD (13/24) (HDV/DV i.LINK INTERFACE)	MD-141 BOARD (3/3) (SERVO)
VC-543 BOARD (14/24) (DS CONTROL, HI CONTROL)	GY-014 BOARD (PITCH/YAW SENSOR AMP)
VC-543 BOARD (15/24) (SDRAM, FLASH, EEPROM)	AS-060 BOARD (VC-PI RELAY)
VC-543 BOARD (16/24) (FRONT CONTROL)	CK-204 BOARD (CABINET (R) RELAY)

4-2. SCHEMATIC DIAGRAMS

TO (1/2)

- GP-025 BOARD (VC-VF RELAY)
- HP-153 BOARD (HEADPHONES JACK)
- JK-376 BOARD (HDV/DV, A/V R CONNECTOR)
- KY-105 BOARD (CONTROL SWITCH)
- MA-454 BOARD (MIC AMP)
- MS-405 BOARD (MS CONNECTOR)
- XL-010 BOARD (XLR INPUT)
- HT-002 BOARD (PANEL REVERSE DETECTION)
- FP-965 FLEXIBLE BOARD (HDMI CONNECTOR)
- FP-969 FLEXIBLE BOARD (EJECT SWITCH)
- FP-971 FLEXIBLE BOARD (VC-MS CONNECTION)
- FP-972 FLEXIBLE BOARD (HOT SHOE)
- FP-973 FLEXIBLE BOADR (VC-JK CONNECTION)
- FP-974 FLEXIBLE BOARD (GP-VF CONNECTION)
- FP-975 FLEXIBLE BOARD (PI-MA CONNECTION)
- FP-966 FLEXIBLE BOARD (REMOTE SENSOR(FRONT), PANEL DETECT)
- FP-967 FLEXIBLE BOARD (VC-GP CONNECTION, REMOTE SENSOR (BACK))
- FP-981 FLEXIBLE BOARD (VC-AS CONNECTION)
- FP-982 FLEXIBLE BOARD (AS-PI CONNECTION)
- FP-983 FLEXIBLE BOARD (VC-MD CONNECTION)
- FP-776 FLEXIBLE BOARD (VF-EVF CONNECTION)
- CONTROL SWITCH BLOCK (PS24000)
- CONTROL SWITCH BLOCK (PZ93000)
- CONTROL SWITCH BLOCK (AU93000)
- CONTROL SWITCH BLOCK (CF24000)
- CONTROL SWITCH BLOCK (GZ92000)
- CONTROL SWITCH BLOCK (KP24000)
- CONTROL SWITCH BLOCK (XS93000)
- FP-031, FP-032, FP-228 FLEXIBLE BOARD (MECHANISM BLOCK)
- COMMON NOTE FOR SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS (ENGLISH)

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. pF : μμF. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. kΩ=1000 Ω, MΩ=1000 kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

  Example C541 22U TA A — Kinds of capacitor / Case size
  L452 10UH 2520 — External dimensions (mm)
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- : non flammable resistor
- : fusible resistor
- : panel designation
- : B+ Line
- : B– Line
- : IN/OUT direction of (+,–) B LINE.
- : adjustment for repair.

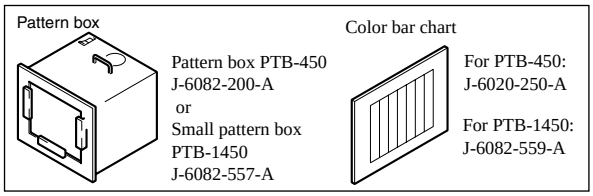
(Measuring conditions voltage and waveform)

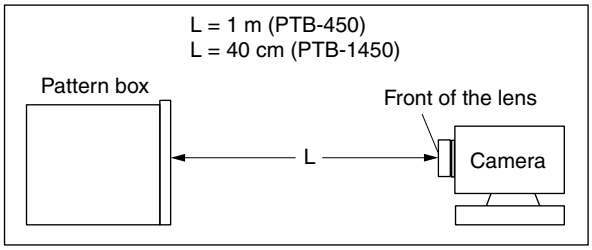
- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Precautions for Replacement of Imager

- If the imager has been replaced, carry out all the adjustments for the camera section.
- As the imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

1. Connection





2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

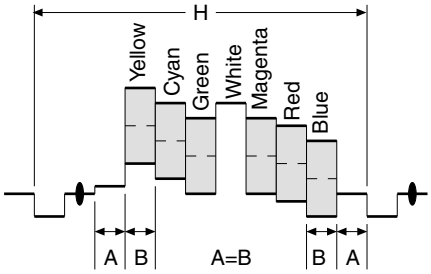


Fig. a (Video output terminal output waveform)

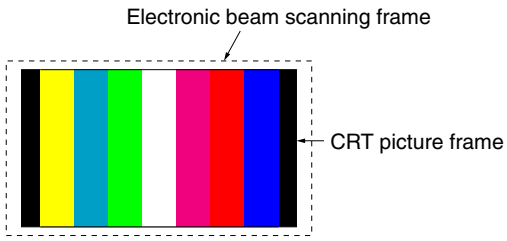


Fig.b (Picture on monitor TV)

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

(JAPANESE)

回路図共通ノート
（他に必要なノートは各ブロックに記載してあります）
【回路図ノート】
・ケミコン，タンタルを除くコンデンサで，耐圧50V以下のものはその耐圧を省略。単位はすべてμF（pはpF）。
・チップ抵抗で指示のないものは，1／10W以下。
kΩ＝1000Ω，MΩ＝1000kΩ
・チップ部品交換時の注意
取り外した部品は再使用せず，未使用の部品をご使用ください。
タンタルコンデンサのマイナス側は熱に弱いため注意してください。
・チップ部品には下記のように表示したものがあります。

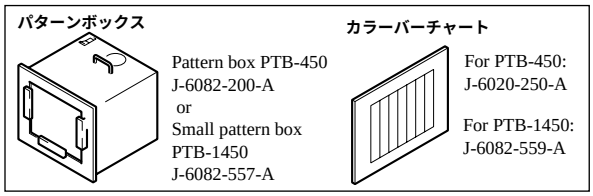
例	C 541	L 452
	22U	10UH
	TA　A	2520
	↑　↑	↑
	種類　ケースサイズ	外形寸法（mm）

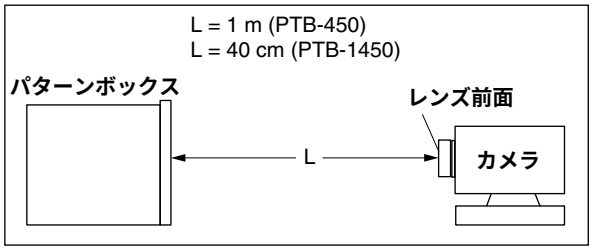
・抵抗，コンデンサ，ICなど定数にXXがあるものは，使用していない事を示しています。このため，使用していない回路が記載されている事があります。
・★印のある部品は，機種などにより異なりますので機能別マウント一覧表を参照してください。
・可変抵抗と半固定抵抗で，B特性の表示を省略。
・信号名表記について，下記のような場合があります。
XEDIT → $\overline{\text{EDIT}}$　　PB/XREC → PB/$\overline{\text{REC}}$
・ は不燃性抵抗。
・ はヒューズ抵抗。
・ はパネル表示名称。
・はB＋ライン。
・はB－ライン。
・ はBライン（＋，－）の入出力方向を示す。
・ は調整名称。

【電圧・波形測定条件ノート】
・電圧値及び信号波形はパターンボックスのカラーバーチャートを被写体としたときの測定点対アース間の参考値。
（デジタルマルチメータ；入力インピーダンス　DC10MΩ使用）
・使用テスタの入力インピーダンスにより電圧値が多少異なります。

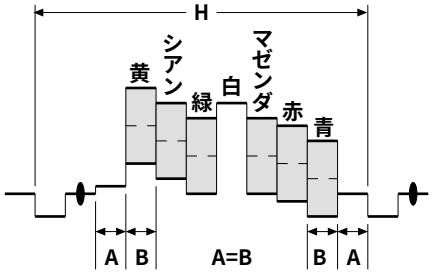
イメージャ交換時の注意
・イメージャを交換した場合は，カメラ部の全調整を行ってください。
・イメージャは構造上，静電気により破壊される恐れがあるため，MOS ICと同様に注意して取り扱ってください。
また，受光部にはゴミの付着，および強い光がはいることのないように注意してください。

1. 接続図

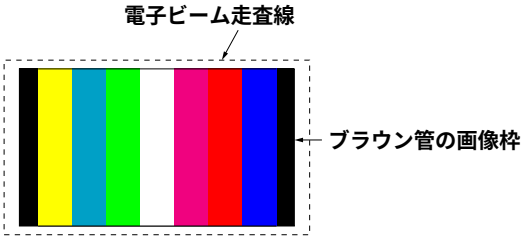




2. 図a及び図bの波形が得られるように画枠調整して下さい。



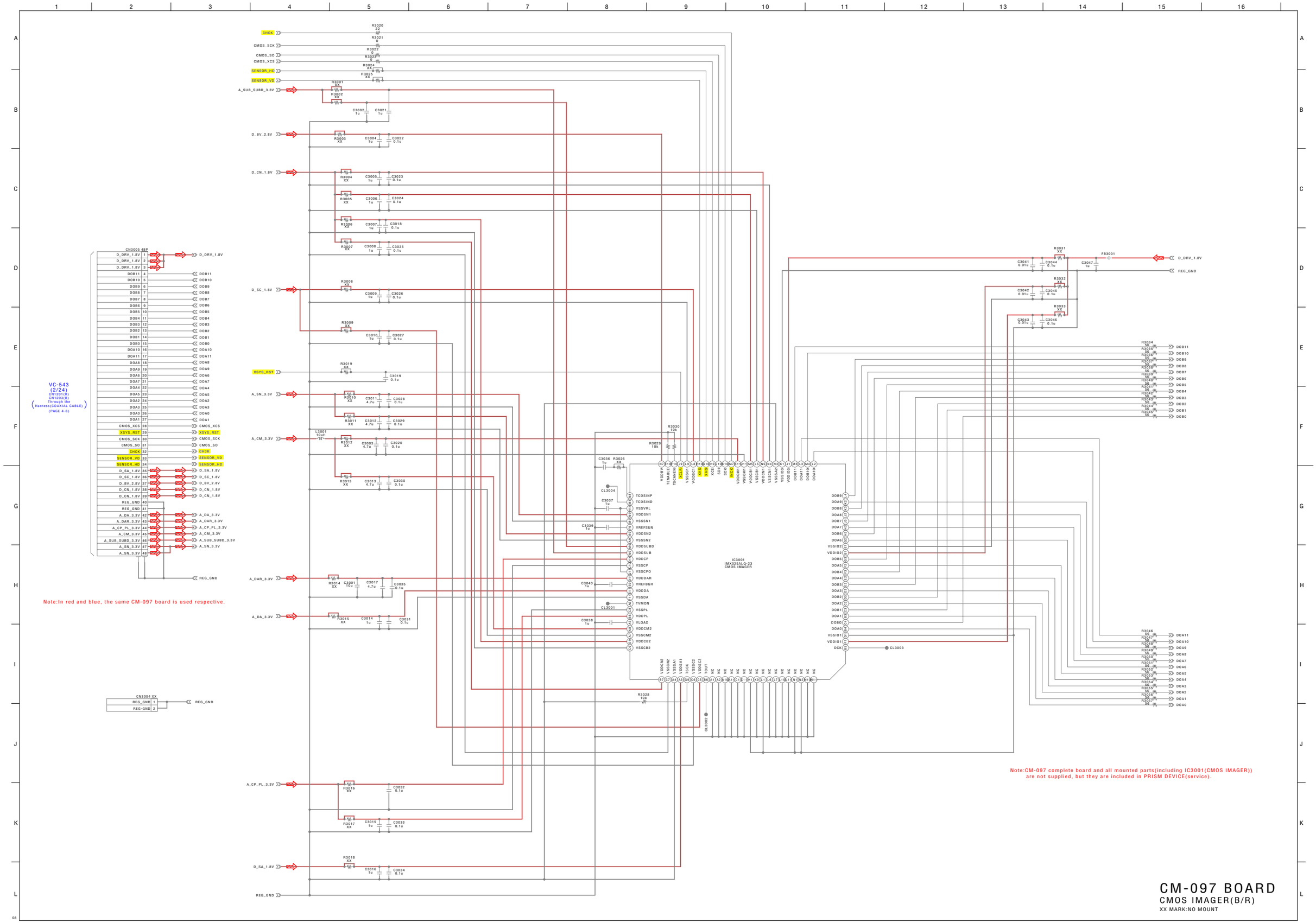
図a（映像入出力端子出力波形）

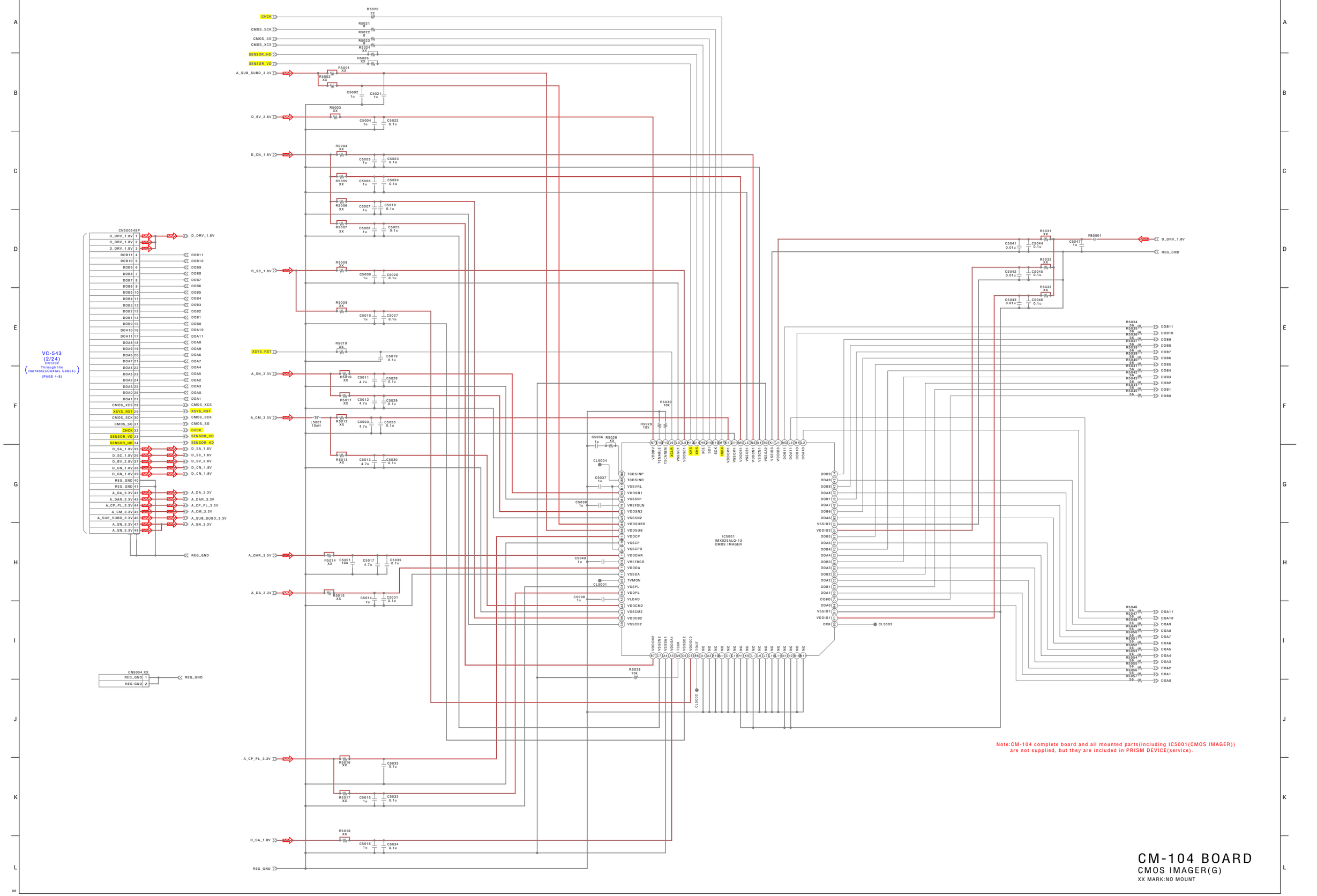


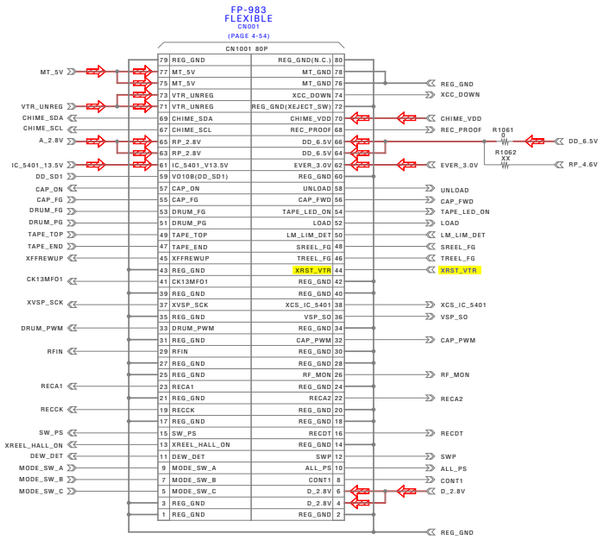
図b（テレビモニタの映像）

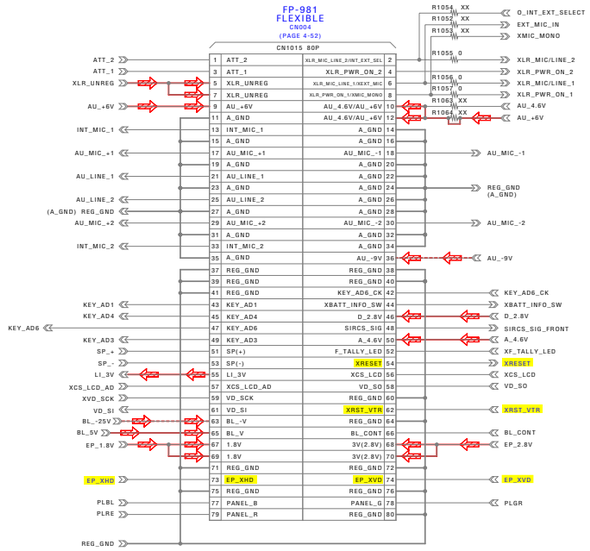
⚠印の部品，または⚠印付きの点線で囲まれた部品は，安全性を維持するために重要な部品です。
従って交換時は，必ず指定の部品を使用して下さい。

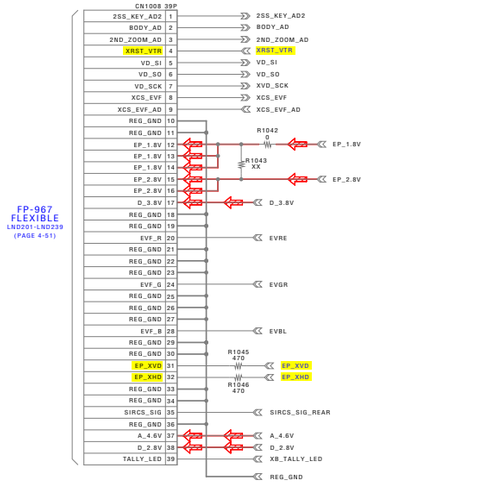
お願い
図面番号で部品を指定するときは基板名又はブロックを併せて指定して下さい。

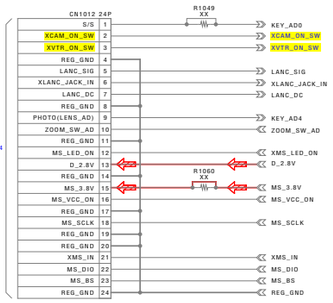

VC-543
(2/24)
CN1201(G)
CN1203(B)
Through the
Harness(COAXIAL CABLE)
(PAGE 4-8)
CN3005 48P
D_DRV_1.8V
D_SC_1.8V
D_BV_2.8V
D_CN_1.8V
A_SUB_SUBD_3.3V
A_SN_3.3V
A_CM_3.3V
A_CP_PL_3.3V
A_DAR_3.3V
A_DA_3.3V
D_SA_1.8V
REG_GND
CN3004 XX
CHCK
CMOS_SCK
CMOS_SO
CMOS_XCS
SENSOR_HD
SENSOR_VD
XSYS_RST
L3001 10uH
IC3001
IMX025ALQ-23
CMOS IMAGER
FB3001
CL3001
CL3002
CL3003
CL3004
Note:In red and blue, the same CM-097 board is used respective.
Note:CM-097 complete board and all mounted parts(including IC3001(CMOS IMAGER))
are not supplied, but they are included in PRISM DEVICE(service).
CM-097 BOARD
CMOS IMAGER(B/R)
XX MARK:NO MOUNT

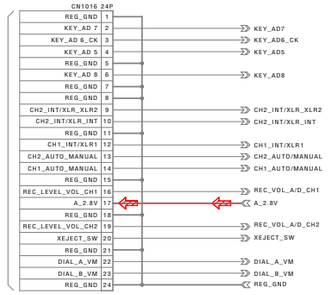

VC-543 (2/24) CN1202 Through the Harness(COAXIAL CABLE) (PAGE 4-8)
CN500548P
D_DRV_1.8V
DDB11
DDB10
DDB9
DDB8
DDB7
DDB6
DDB5
DDB4
DDB3
DDB2
DDB1
DDB0
DDA10
DDA11
DDA8
DDA9
DDA6
DDA7
DDA4
DDA5
DDA3
DDA2
DDA0
DDA1
CMOS_XCS
XSYS_RST
CMOS_SCK
CMOS_SO
CHCK
SENSOR_VD
SENSOR_HD
D_SA_1.8V
D_SC_1.8V
D_BV_2.8V
D_CN_1.8V
REG_GND
A_DA_3.3V
A_DAR_3.3V
A_CP_PL_3.3V
A_CM_3.3V
A_SUB_SUBD_3.3V
A_SN_3.3V
CN5004 XX
IC5001 IMX025ALQ-13 CMOS IMAGER
Note:CM-104 complete board and all mounted parts(including IC5001(CMOS IMAGER)) are not supplied, but they are included in PRISM DEVICE(service).
CM-104 BOARD
CMOS IMAGER(G)
XX MARK:NO MOUNT

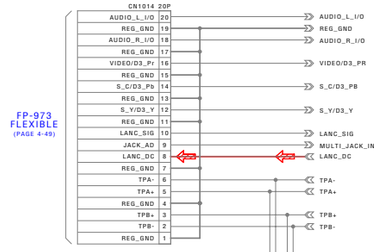


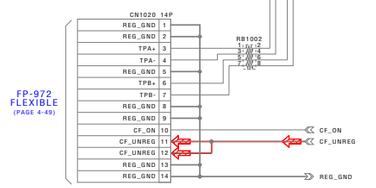


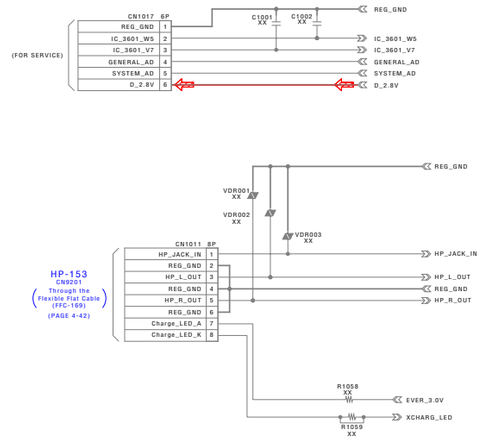


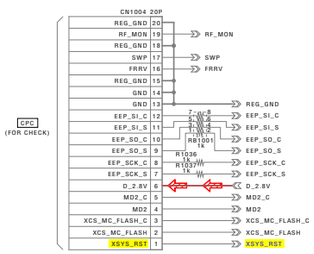


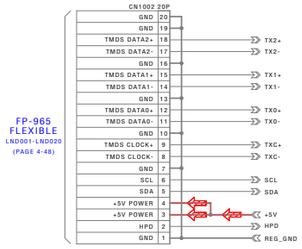




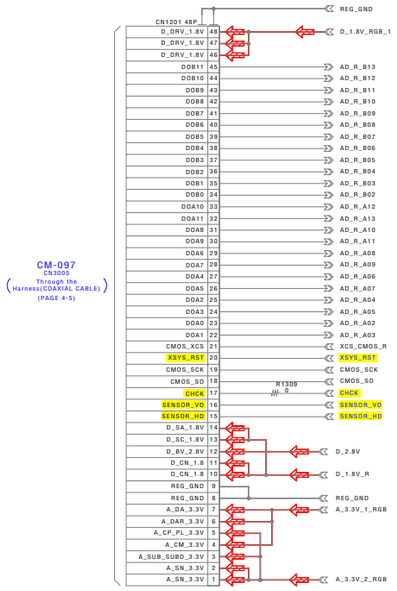




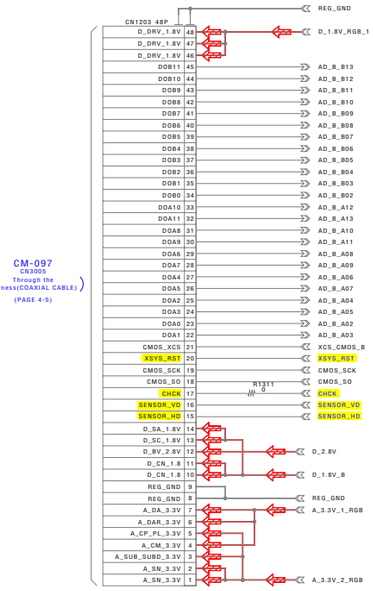




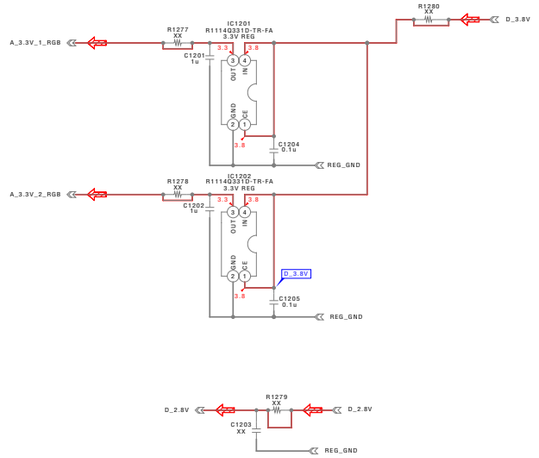
VC-543 BOARD(1/24)
CONNECTOR
XX MARK:NO MOUNT

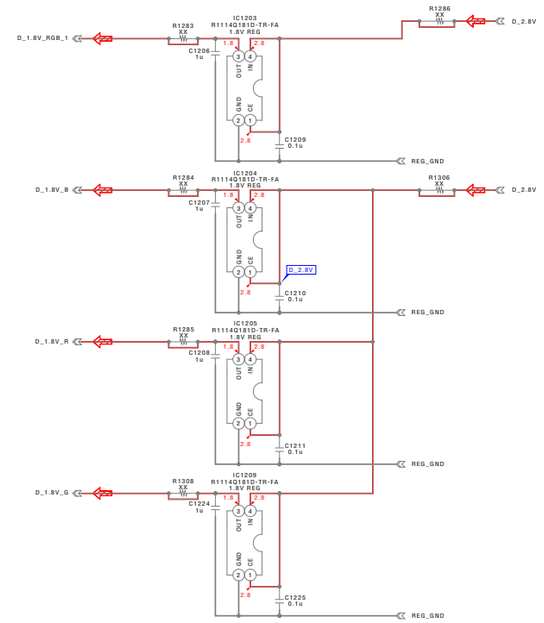


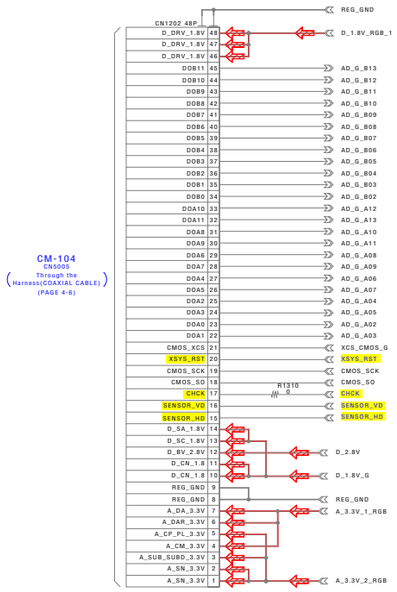
Note:In red and blue, the same CM-097 board is used respectively.

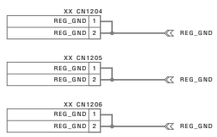


Note:In red and blue, the same CM-097 board is used respectively.







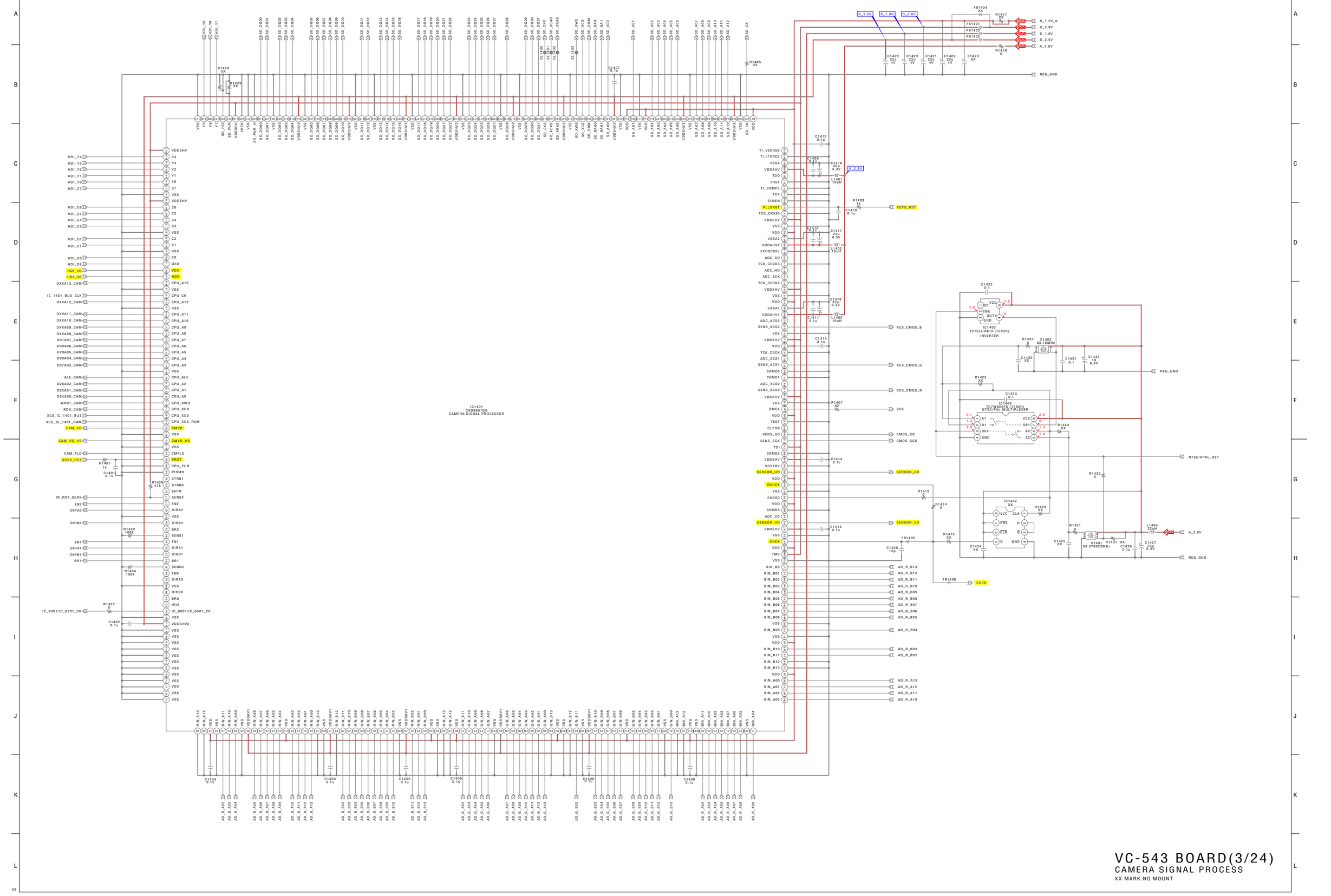


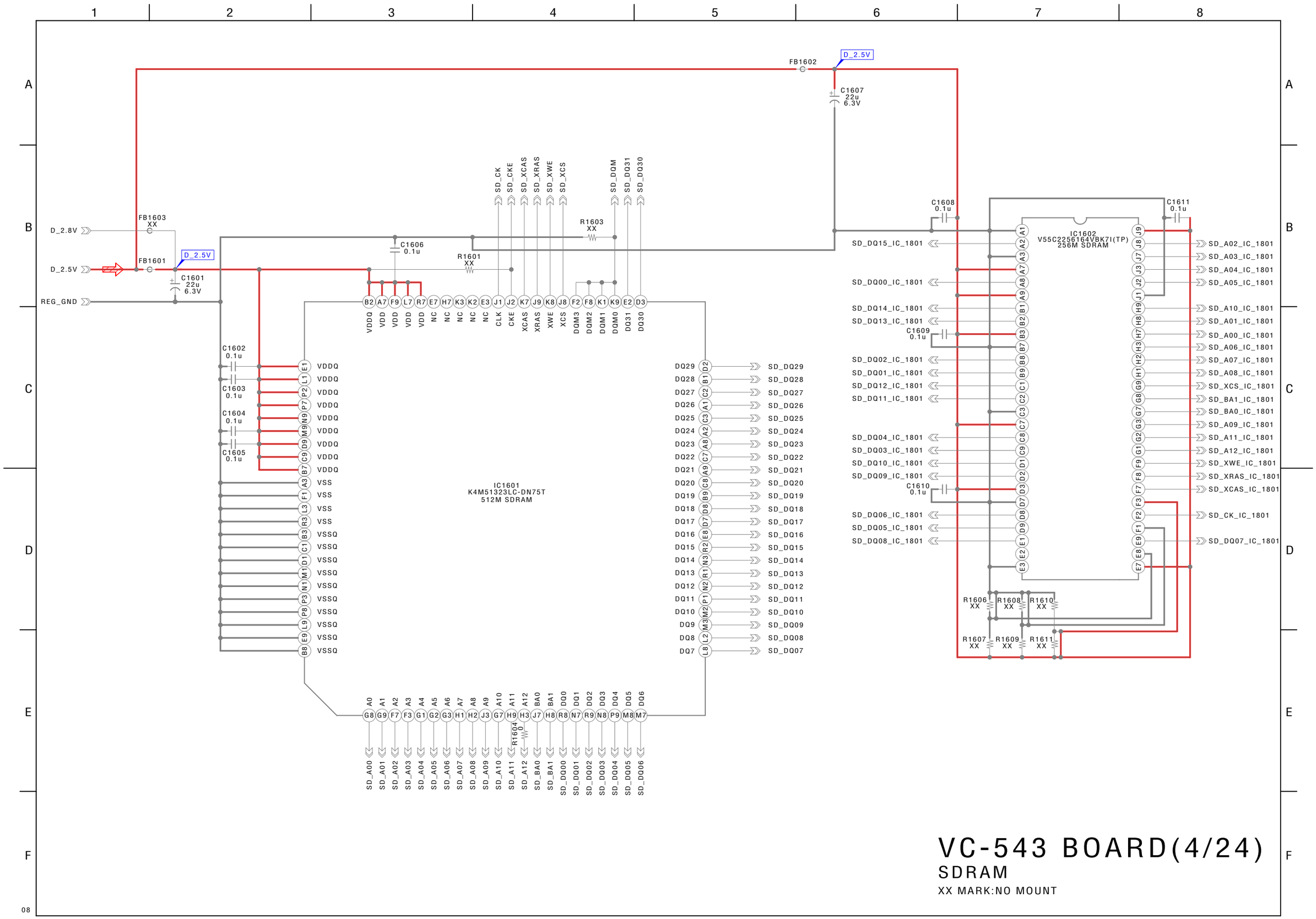
VC-543 BOARD(2/24)

REGULATOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

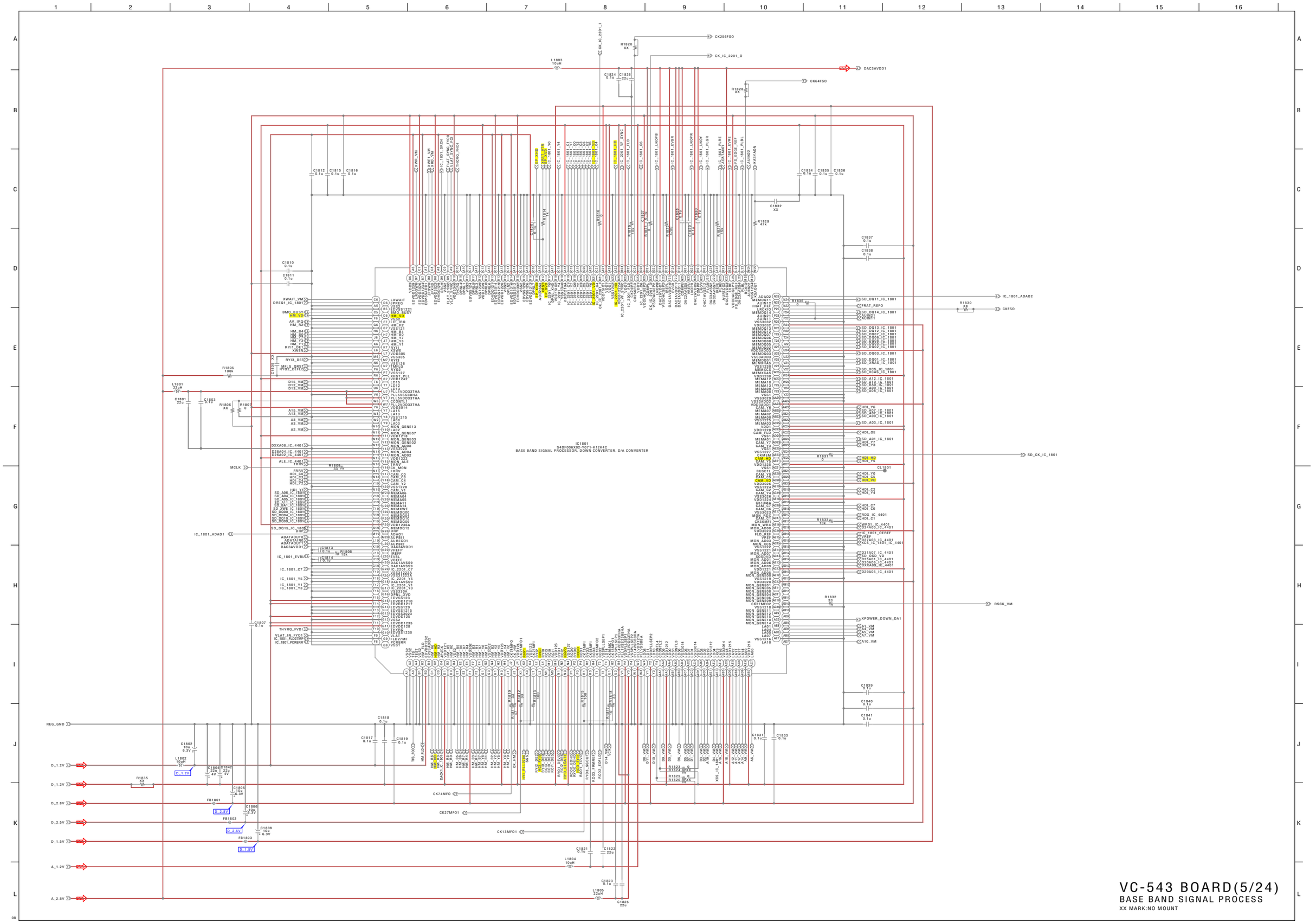

IC1401
CXD9891GG
CAMERA SIGNAL PROCESSOR
IC1403
TC7SLU04FU (TE85R)
INVERTER
IC1404
TC7WB66FK (TE85R)
NTSC/PAL MULTIPLEXER
IC1402
VC-543 BOARD(3/24)
CAMERA SIGNAL PROCESS
XX MARK:NO MOUNT

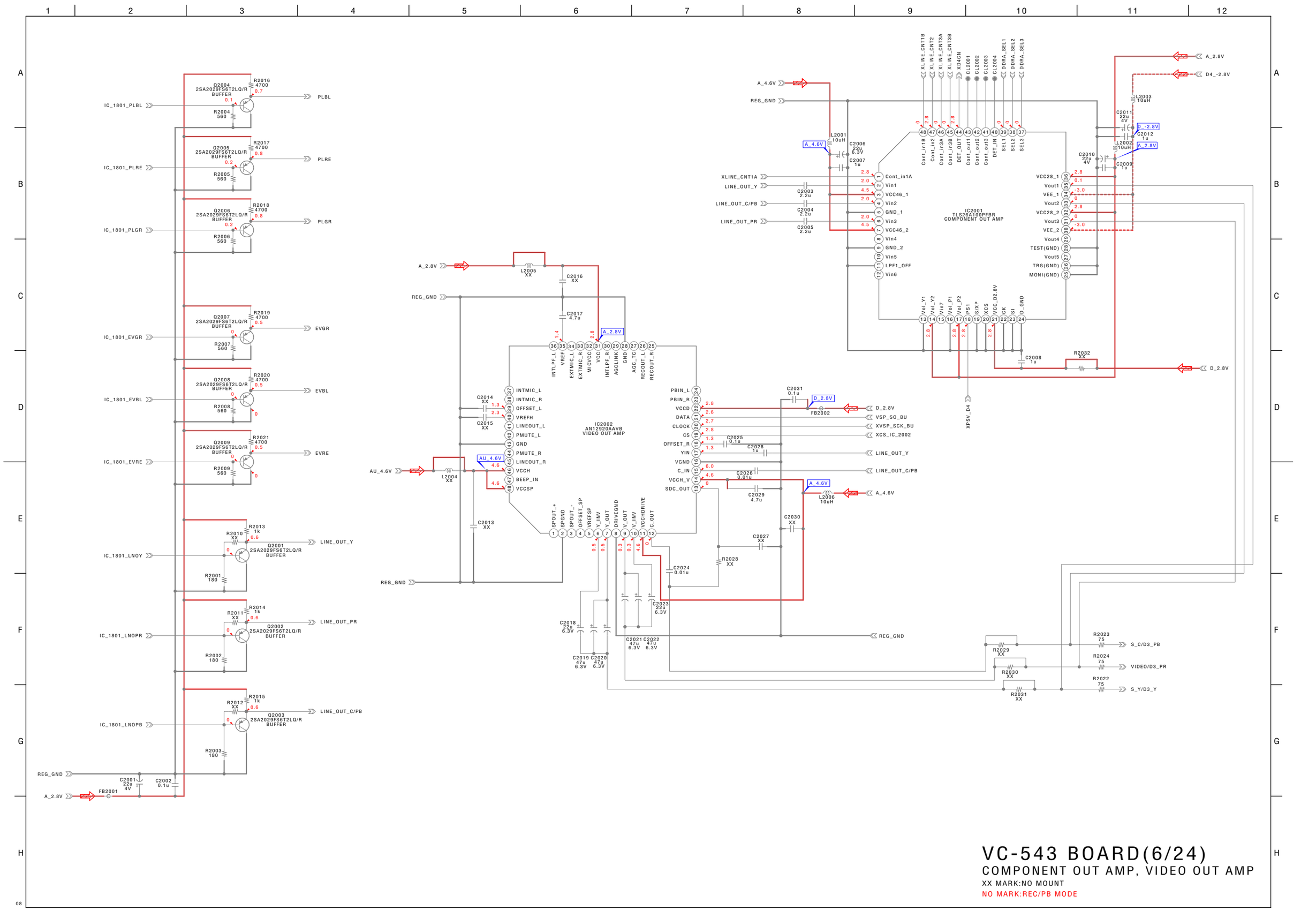


VC-543 BOARD(4/24)

SDRAM

XX MARK:NO MOUNT


IC1801
S4DF006X02-Y071-K12K4C
BASE BAND SIGNAL PROCESSOR, DOWN CONVERTER, D/A CONVERTER
VC-543 BOARD(5/24)
BASE BAND SIGNAL PROCESS
XX MARK:NO MOUNT

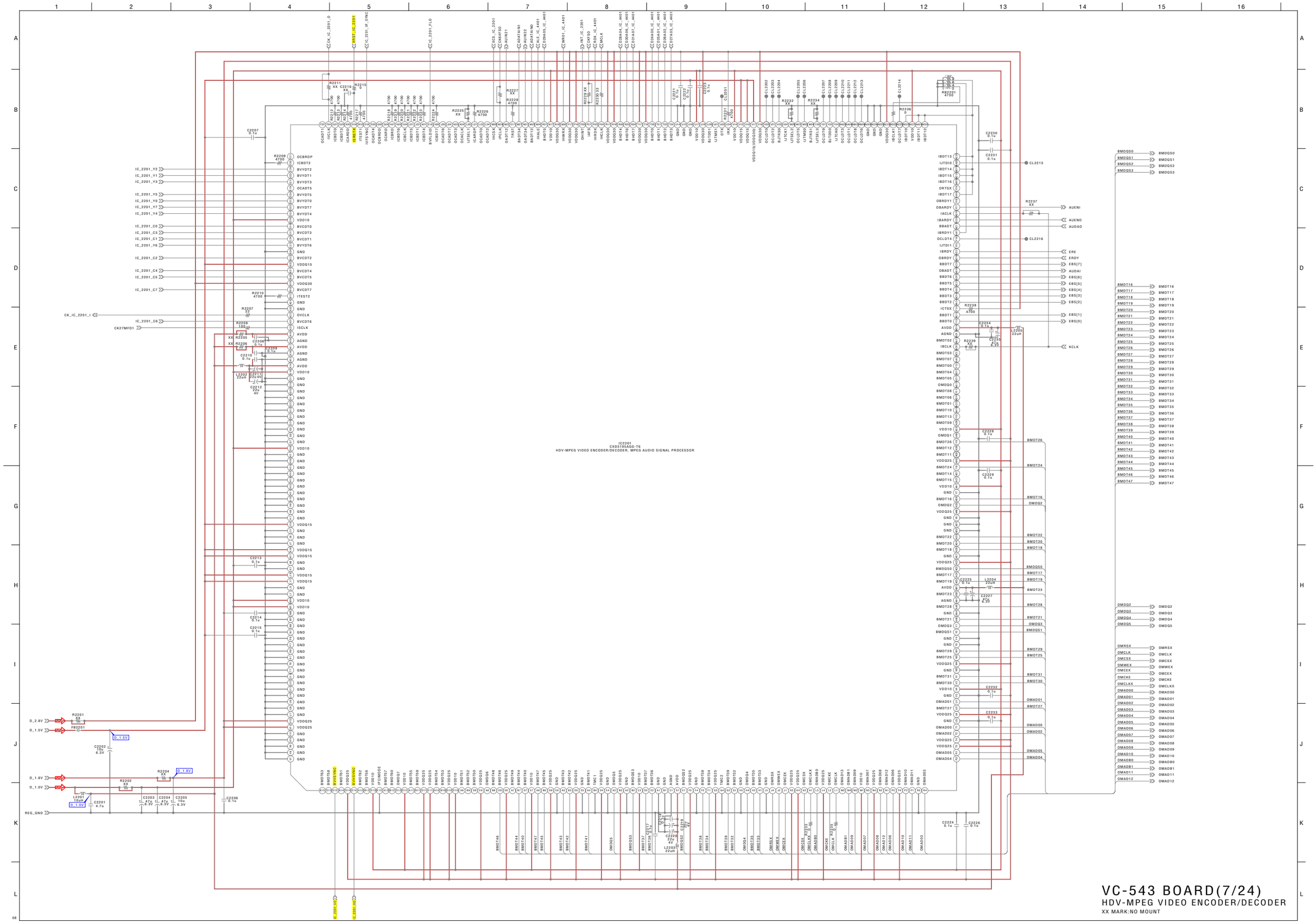


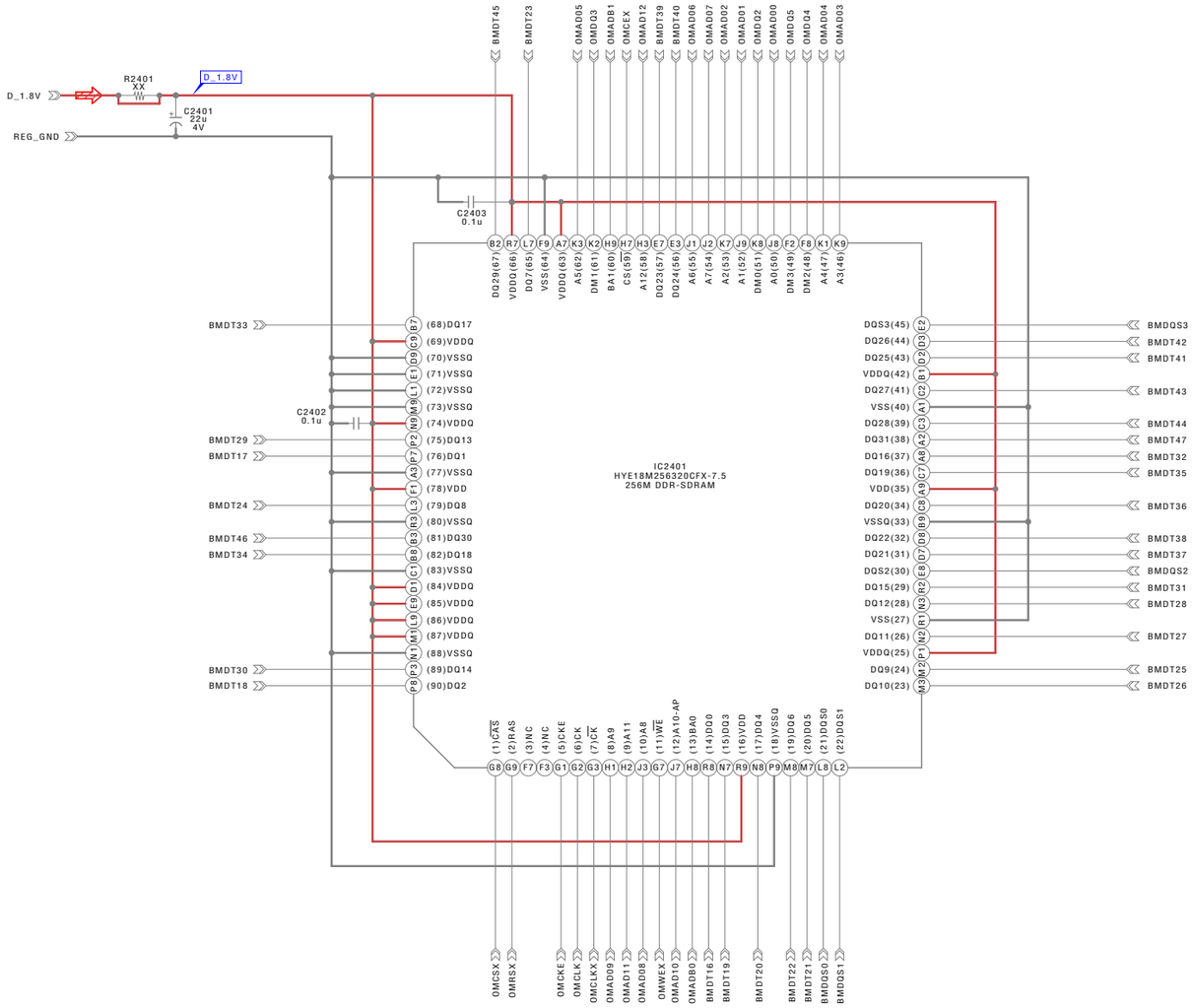
VC-543 BOARD(6/24)

COMPONENT OUT AMP, VIDEO OUT AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE


IC2201
CX20195AGG-T6
HDV-MPEG VIDEO ENCODER/DECODER, MPEG AUDIO SIGNAL PROCESSOR
VC-543 BOARD(7/24)
HDV-MPEG VIDEO ENCODER/DECODER
XX MARK:NO MOUNT

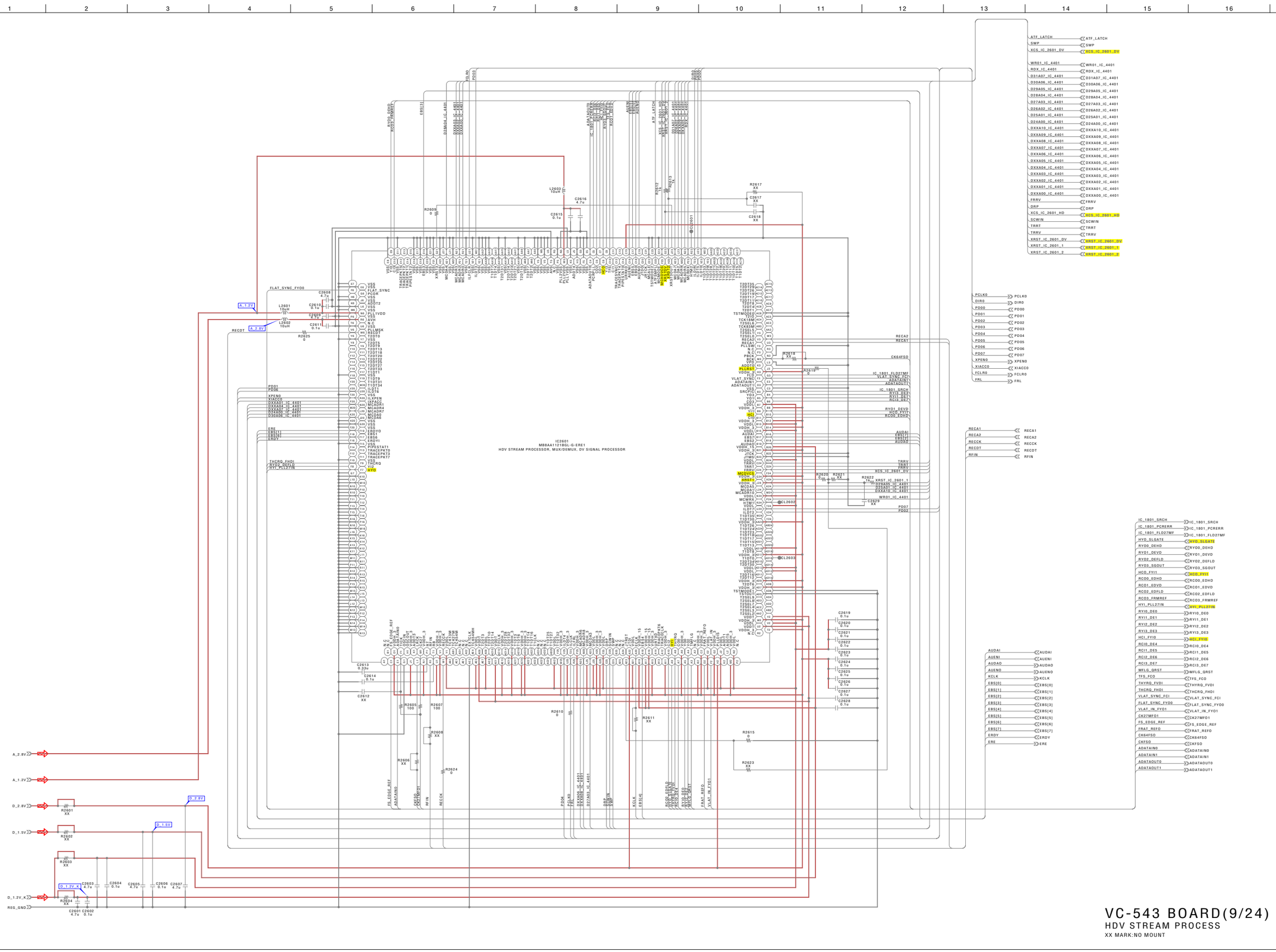


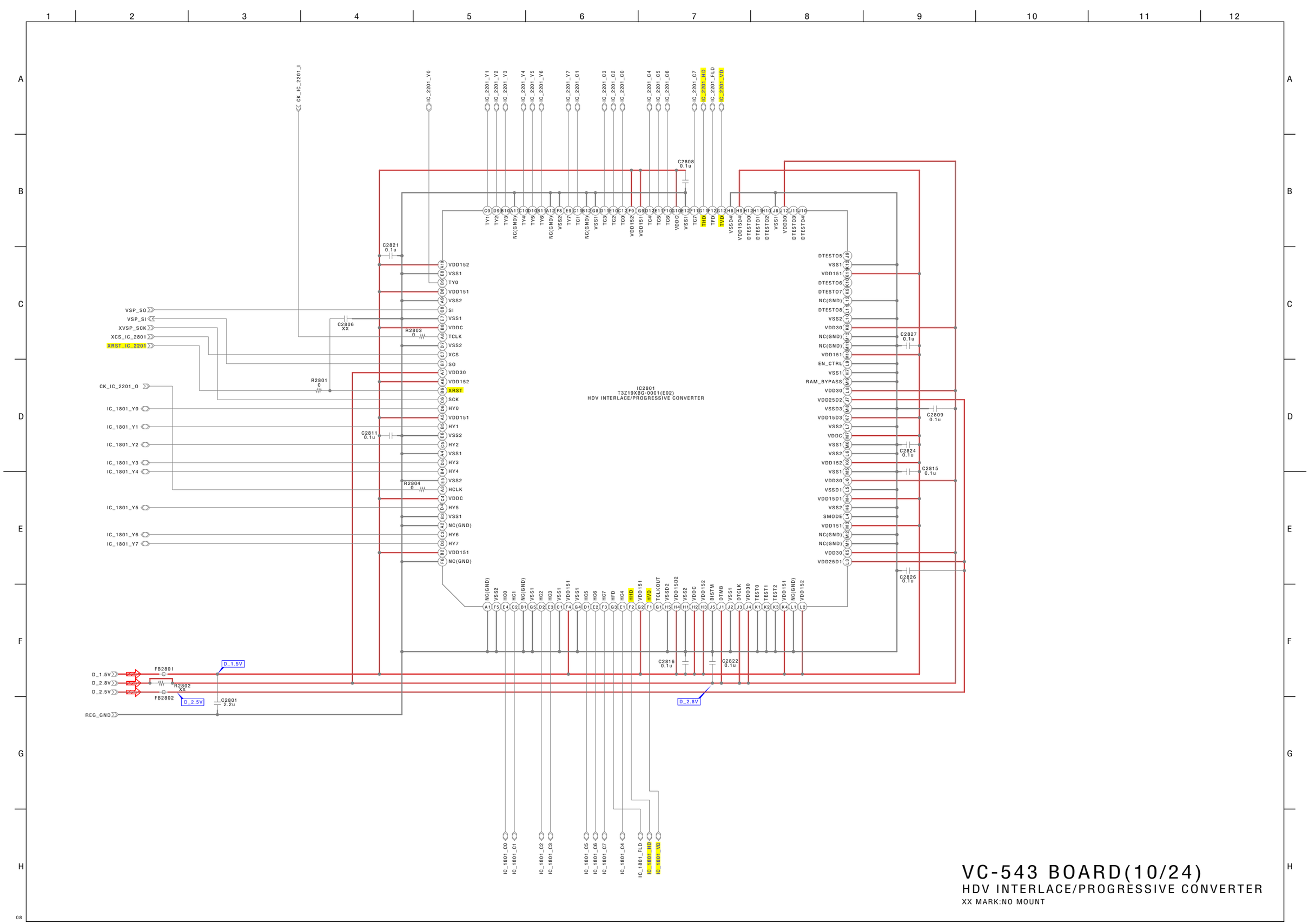
Note:IC2402 is not supplied, but this is included in VC-543 complete board (SERVICE).

VC-543 BOARD(8/24)

SDRAM, FLASH

XX MARK:NO MOUNT

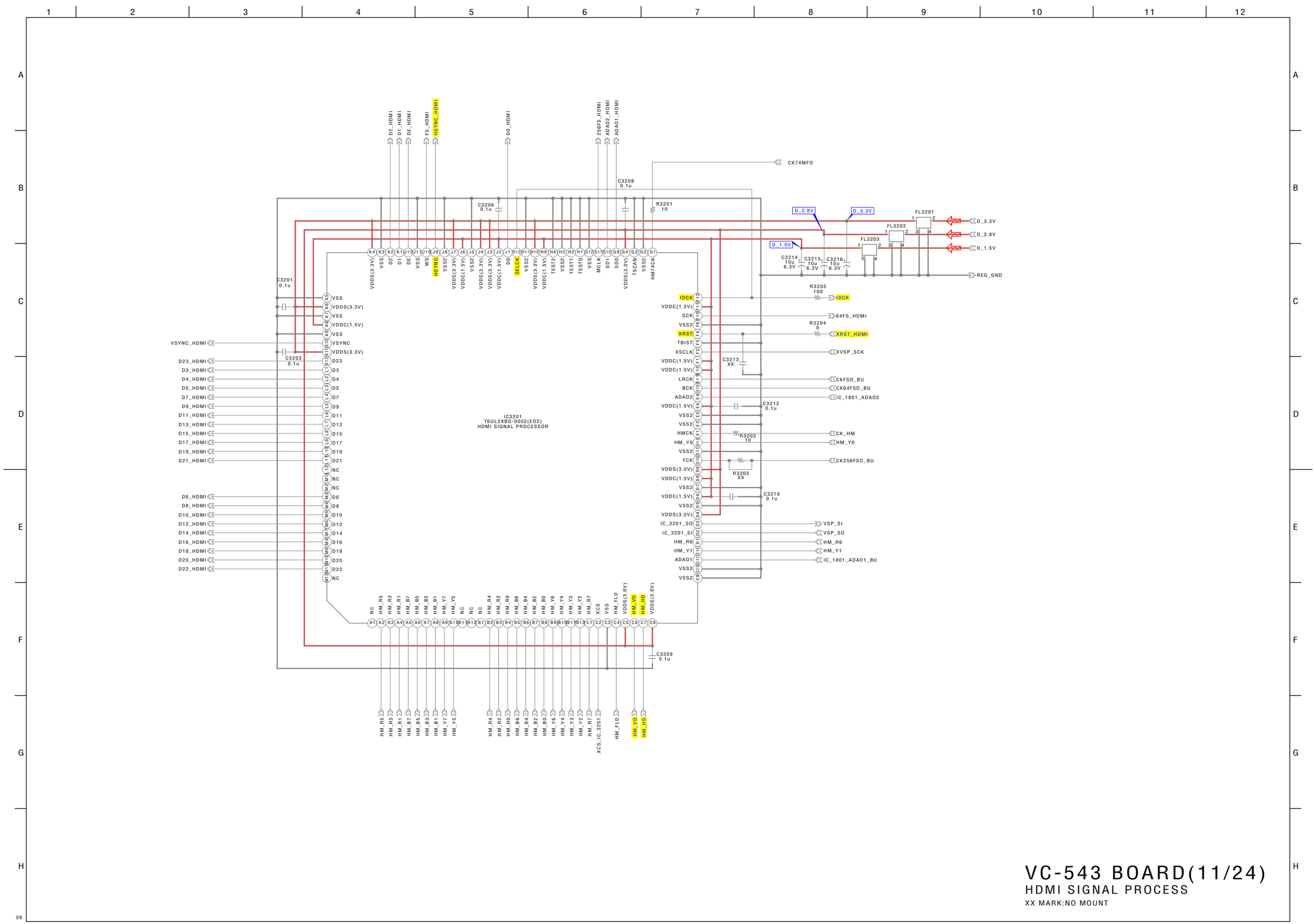

IC2601
MB8AA11218GL-G-ERE1
HDV STREAM PROCESSOR, MUX/DEMUX, DV SIGNAL PROCESSOR
VC-543 BOARD(9/24)
HDV STREAM PROCESS
XX MARK:NO MOUNT



VC-543 BOARD(10/24)

HDV INTERLACE/PROGRESSIVE CONVERTER

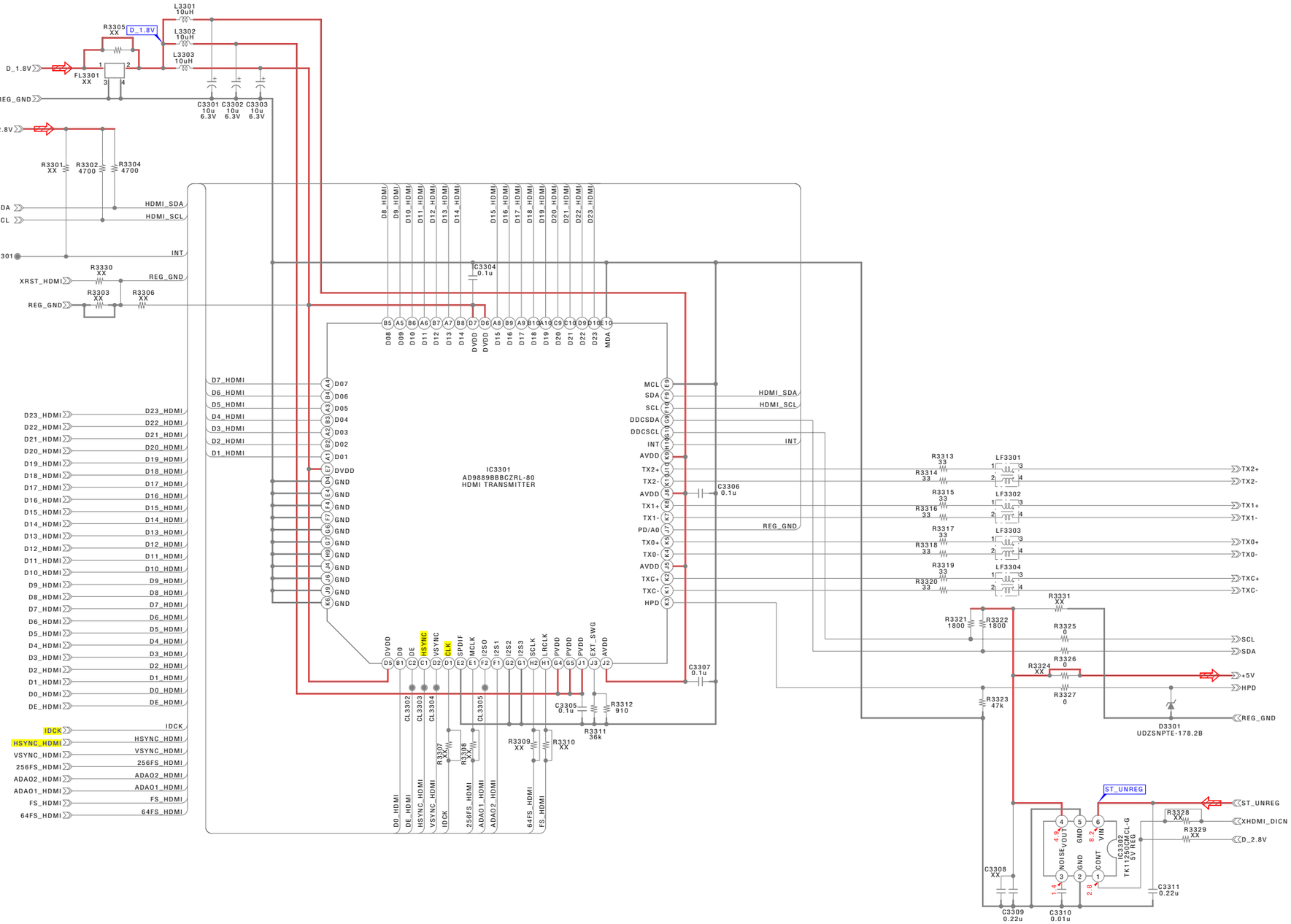
XX MARK:NO MOUNT



VC-543 BOARD(11/24)

HDMI SIGNAL PROCESS

XX MARK:NO MOUNT

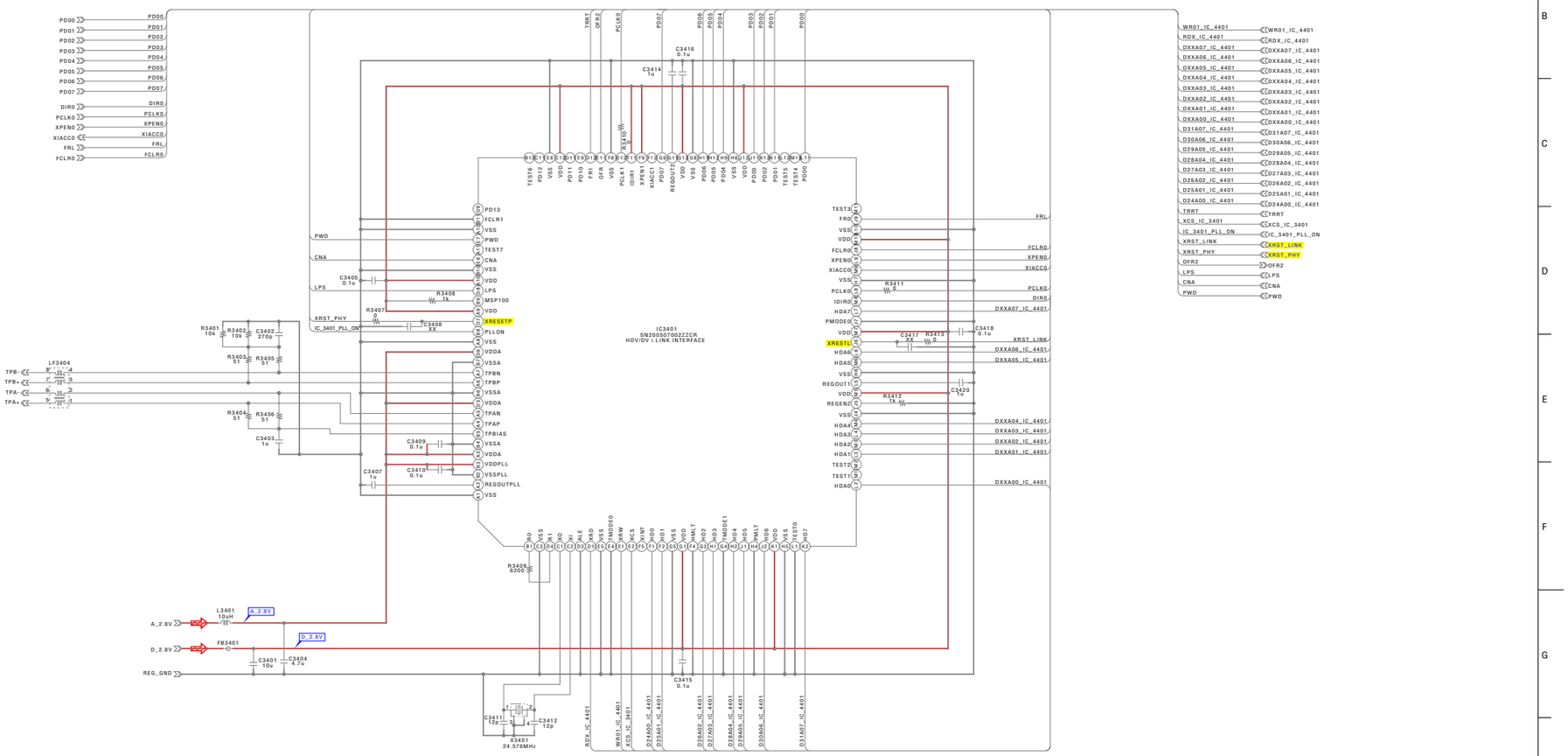


VC-543 BOARD(12/24)

HDMI TRANSMITTER

XX MARK:NO MOUNT

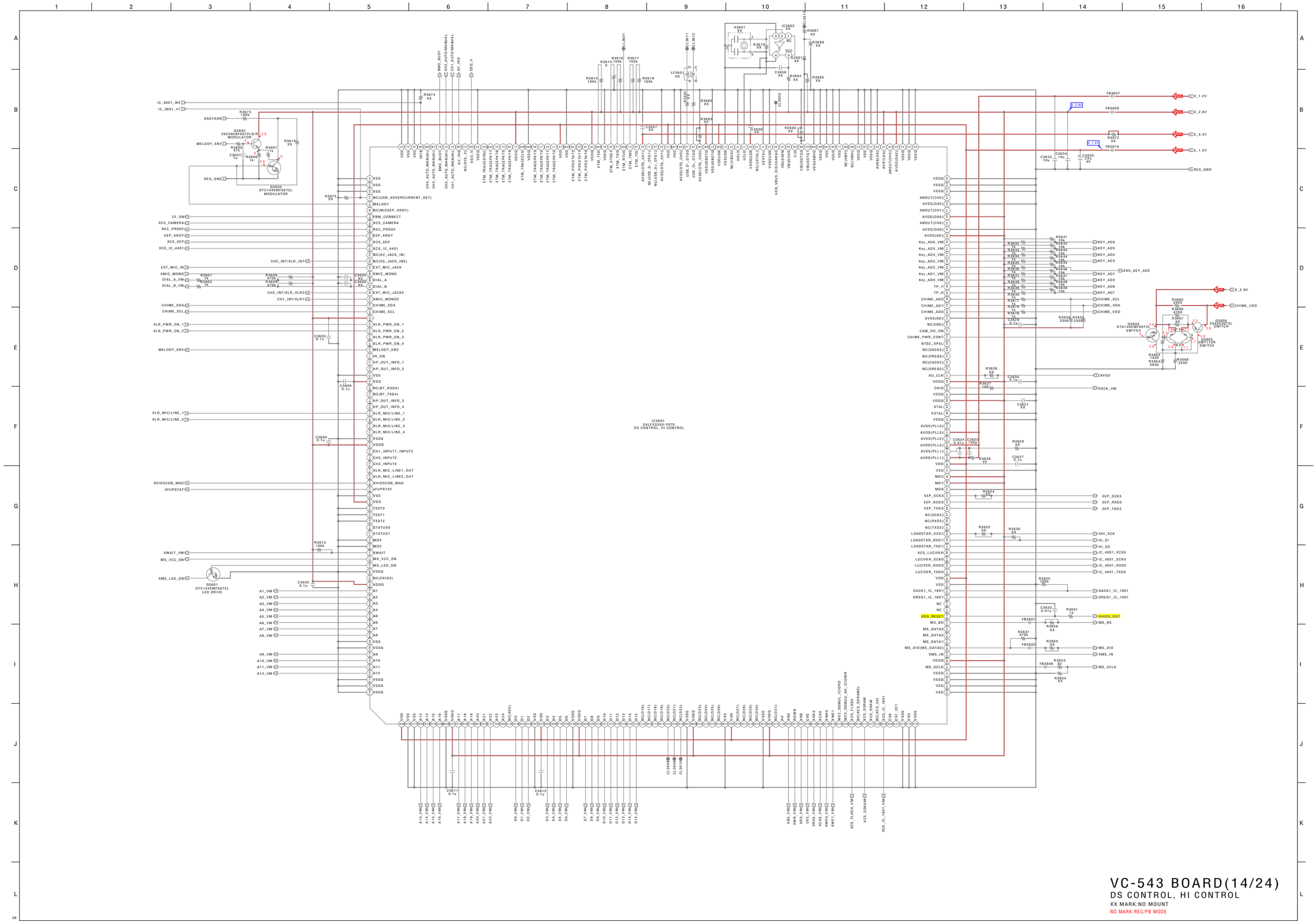
NO MARK:REC/PB MODE

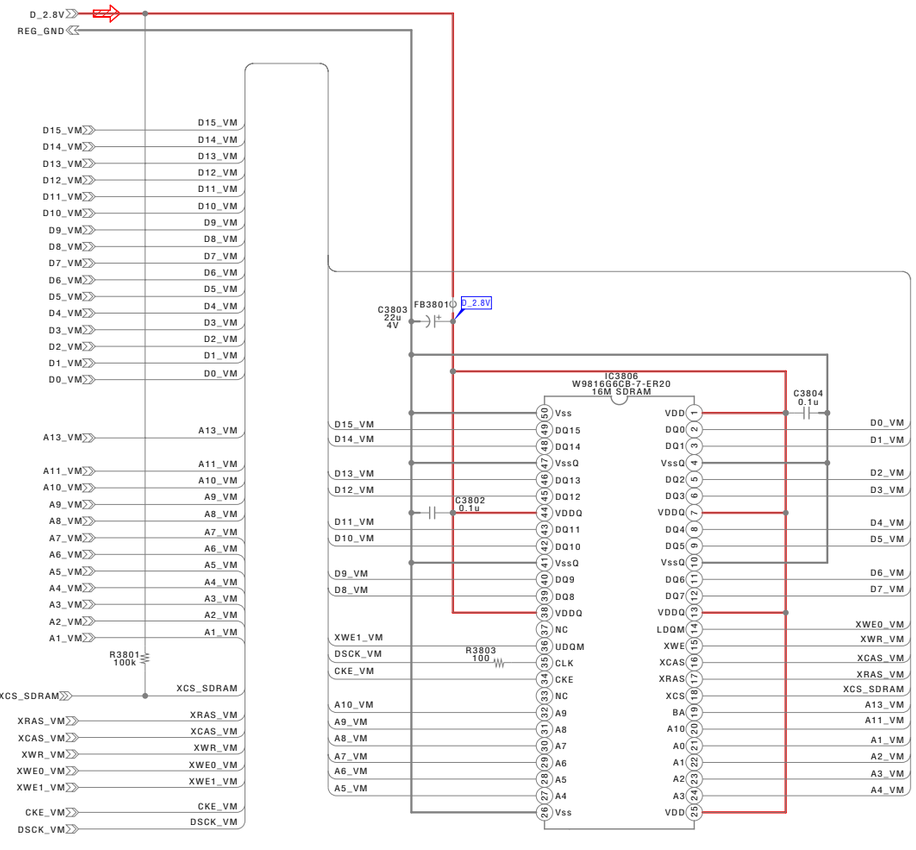


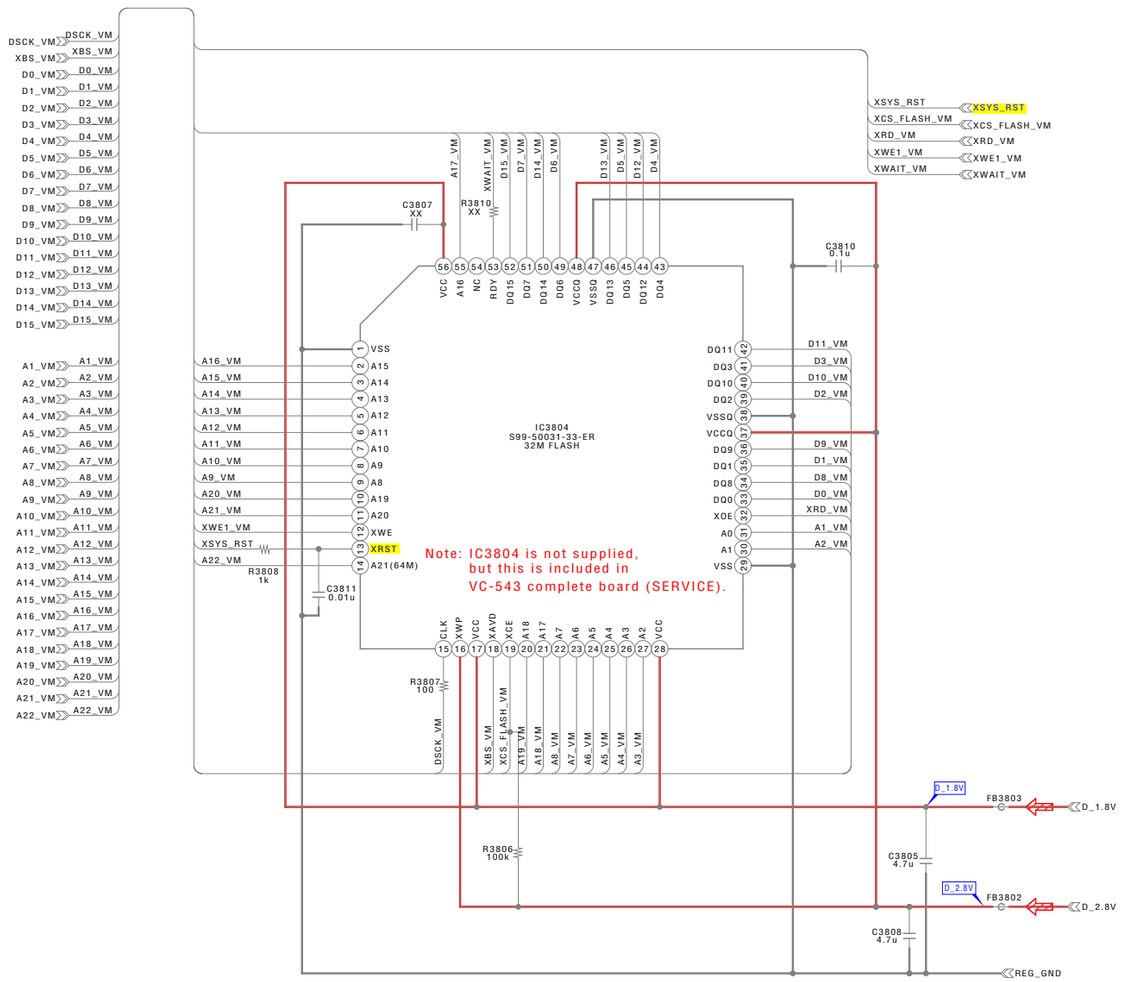
VC-543 BOARD(13/24)

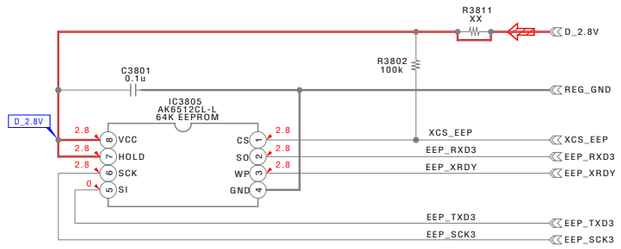
HDV/DV i.LINK INTERFACE

XX MARK:NO MOUNT


IC3601
S4LF533XD-Y070
DS CONTROL, HI CONTROL
VC-543 BOARD(14/24)
DS CONTROL, HI CONTROL
XX MARK:NO MOUNT
NO MARK:REC/PB MODE





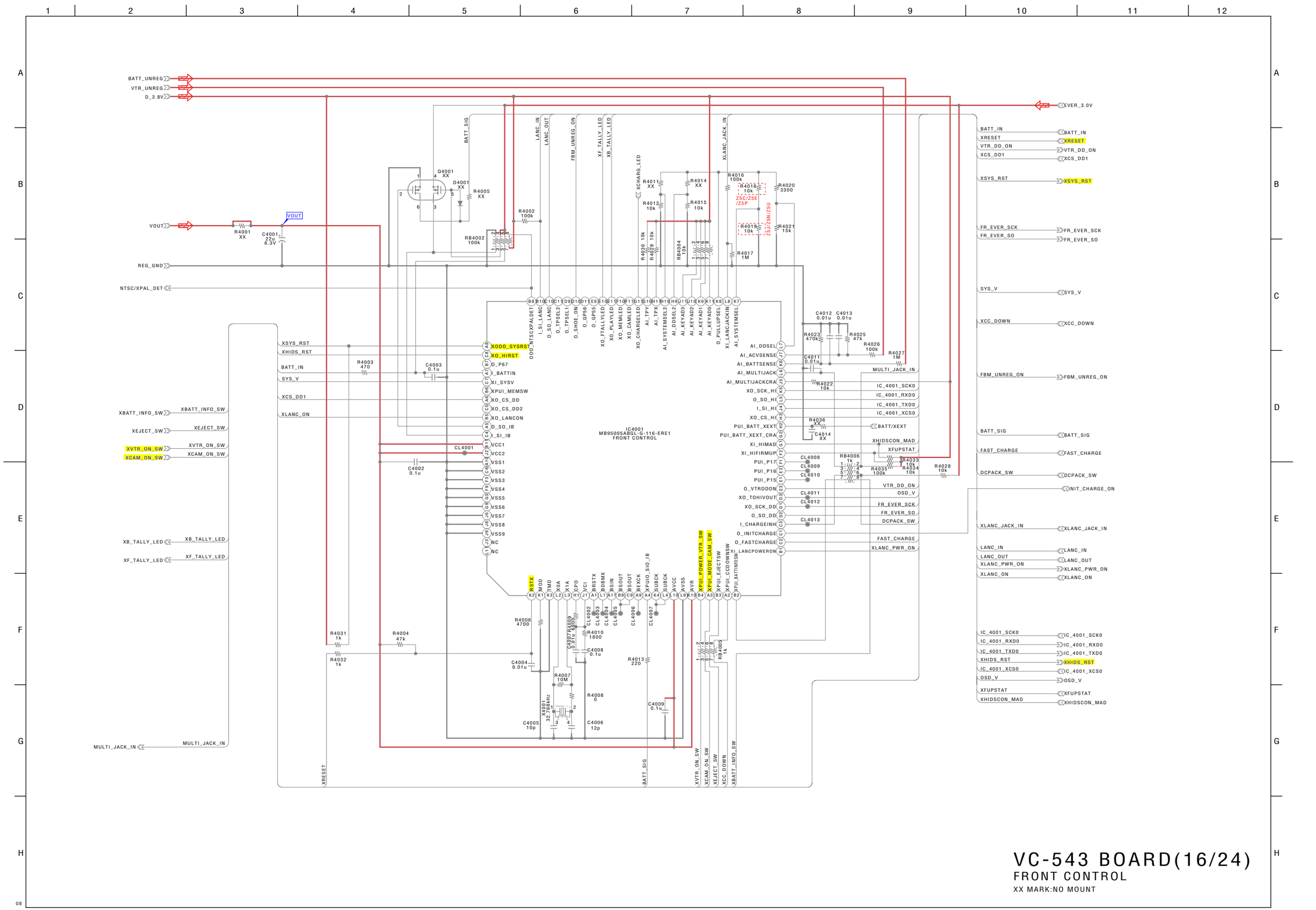


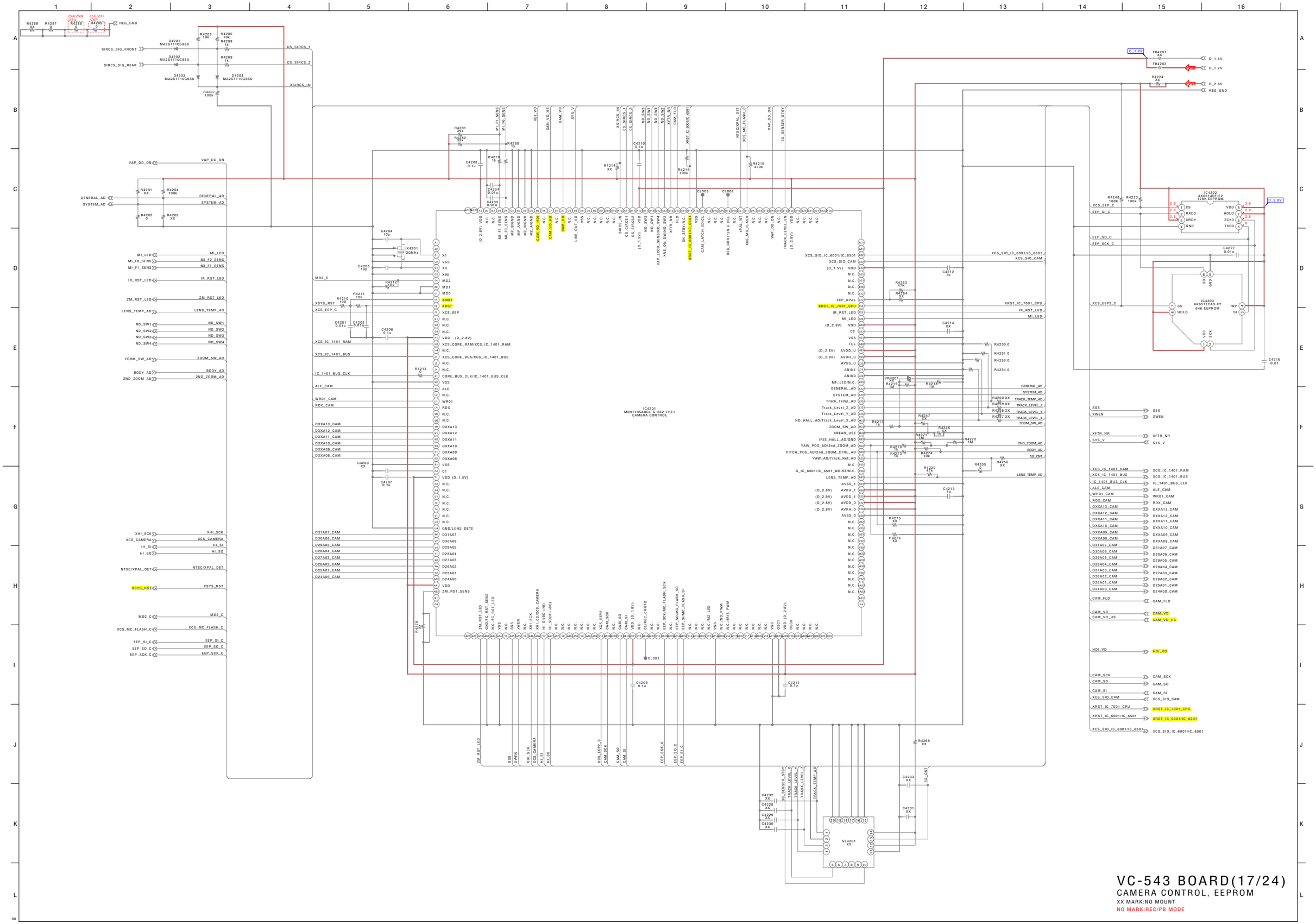
VC-543 BOARD(15/24)

SDRAM, FLASH, EEPROM

XX MARK:NO MOUNT

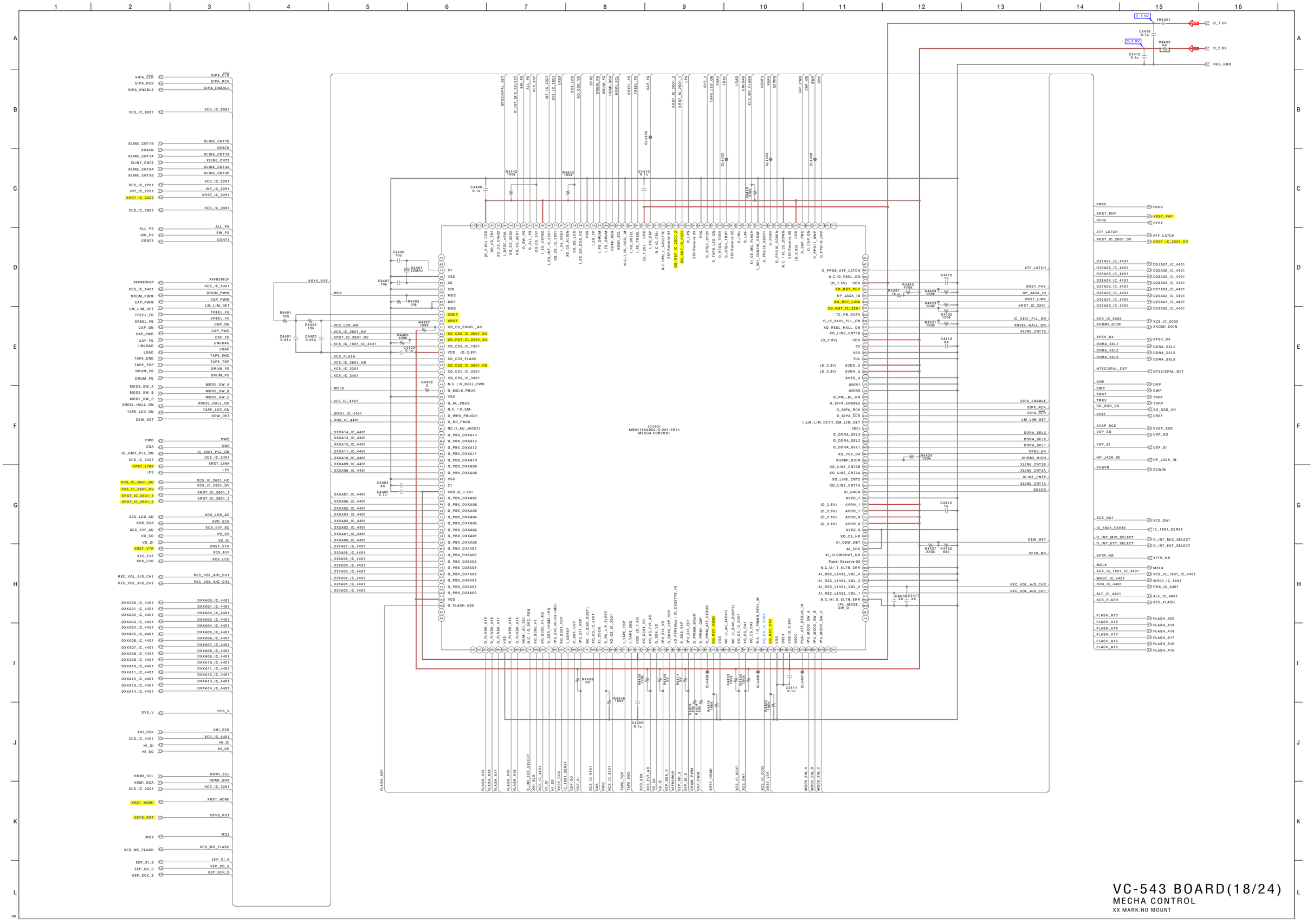
NO MARK:REC/PB MODE


IC4001
MB95005ABGL-G-116-ERE1
FRONT CONTROL
VC-543 BOARD(16/24)
FRONT CONTROL
XX MARK:NO MOUNT

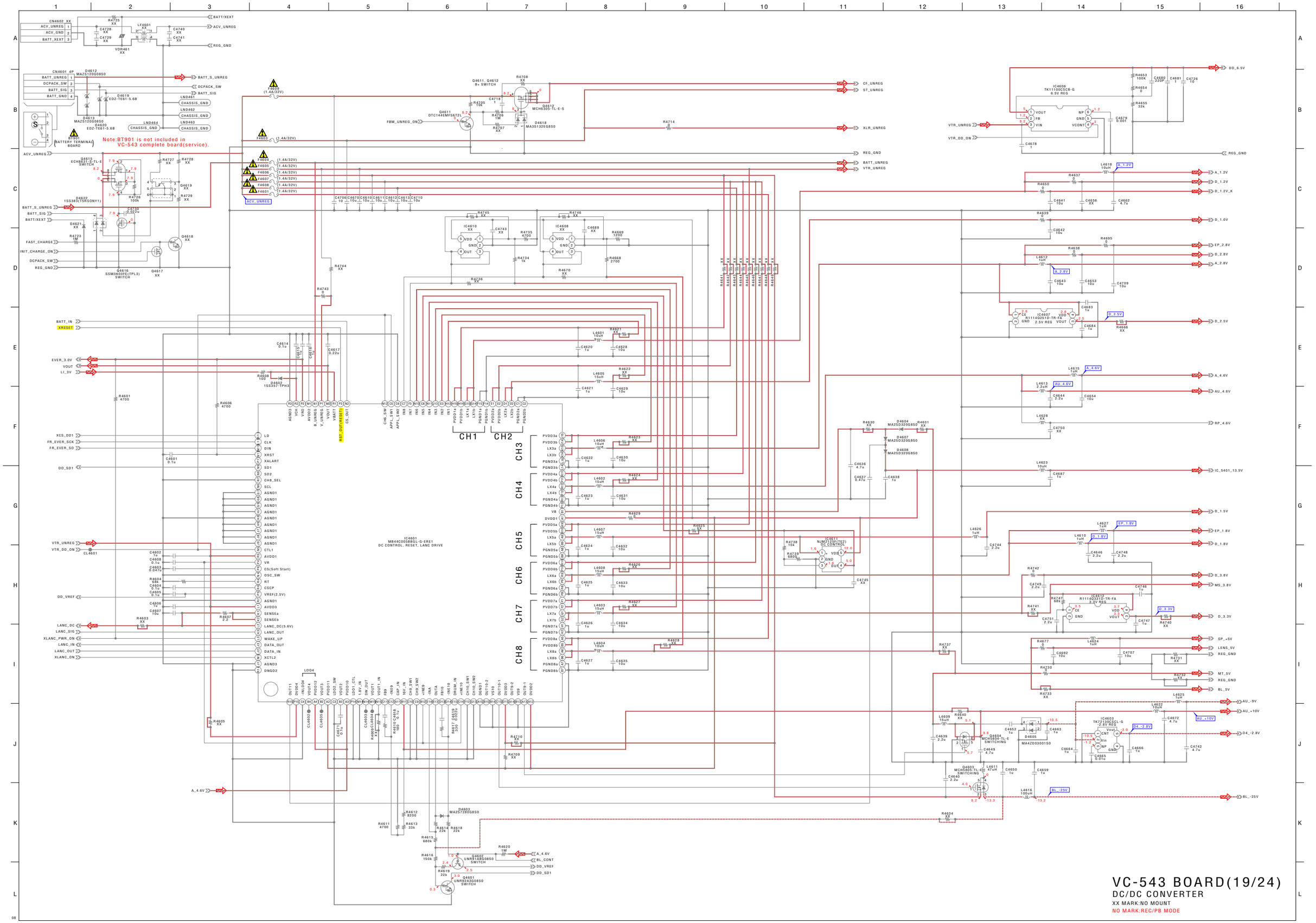

IC4201
MB91195ABGL-G-ZE2-ERE1
CAMERA CONTROL
IC4202
AK6514CF-E2
128K EEPROM
IC4203
AK6512CAS-E2
64K EEPROM
SE4201
XX
VC-543 BOARD(17/24)
CAMERA CONTROL, EEPROM
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

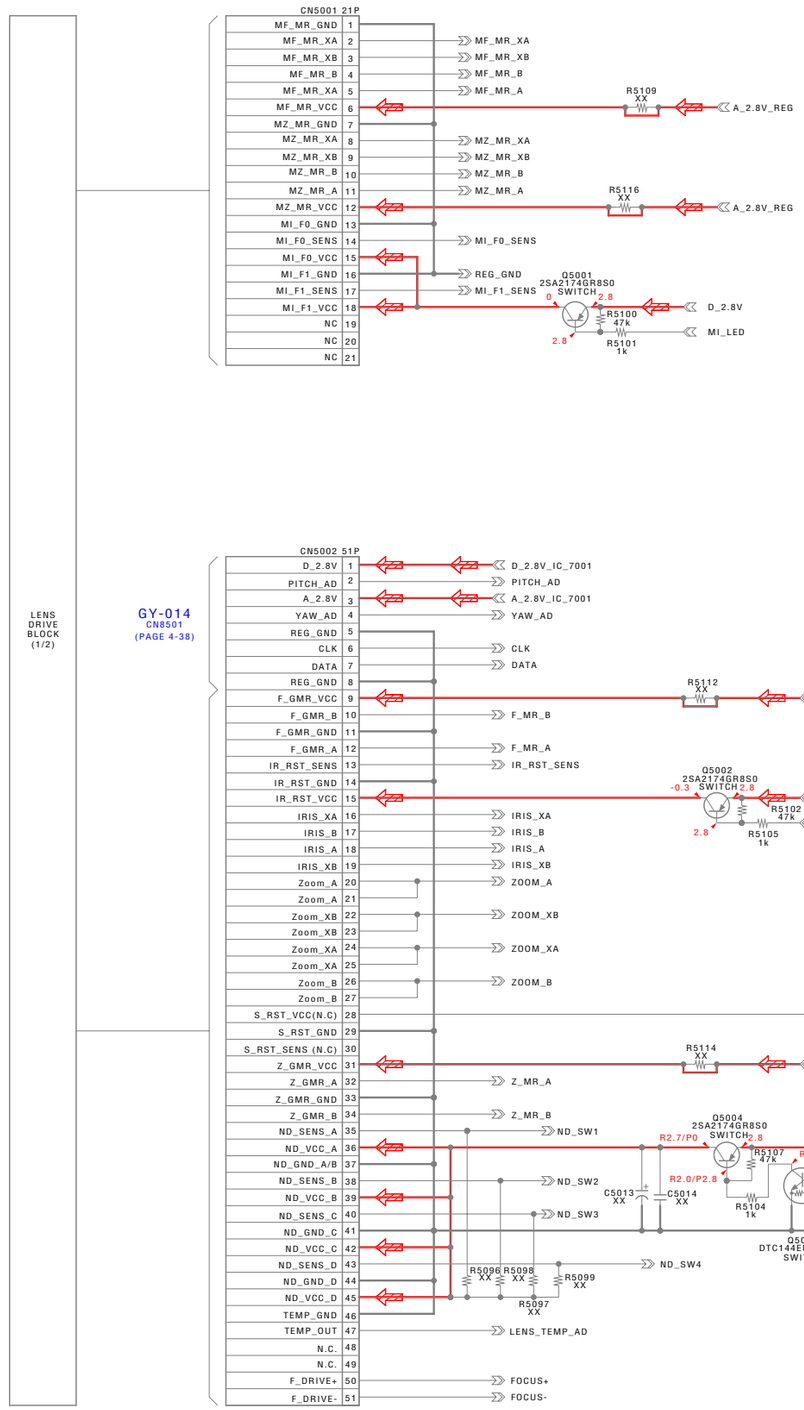
Ver. 1.1 2008.12

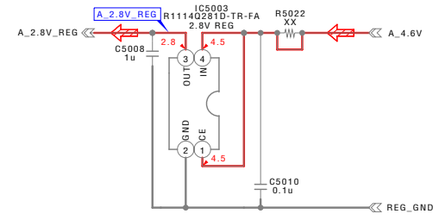
The changed portions from
Ver. 1.0 are shown in blue.

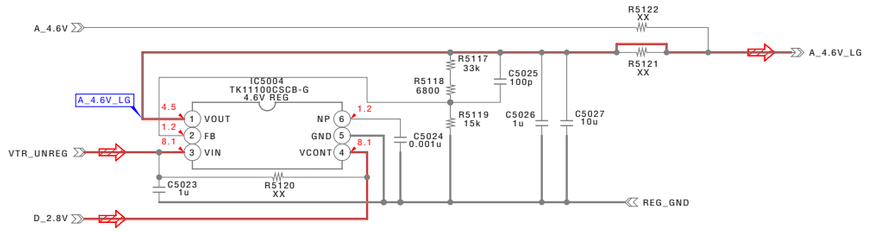


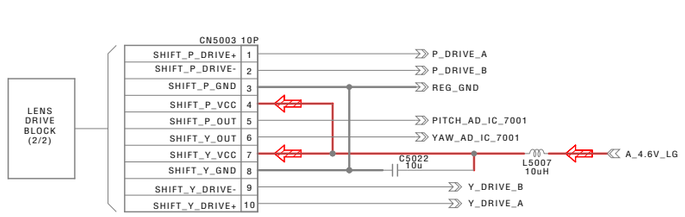
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.











Note:LENS DRIVE BLOCK is replaced as block(OPTICAL UNIT(CF002)),
so that there PRINTED WIRING BOARD and SCHEMATIC DIAGRAM are omitted.

VC-543 BOARD(20/24)

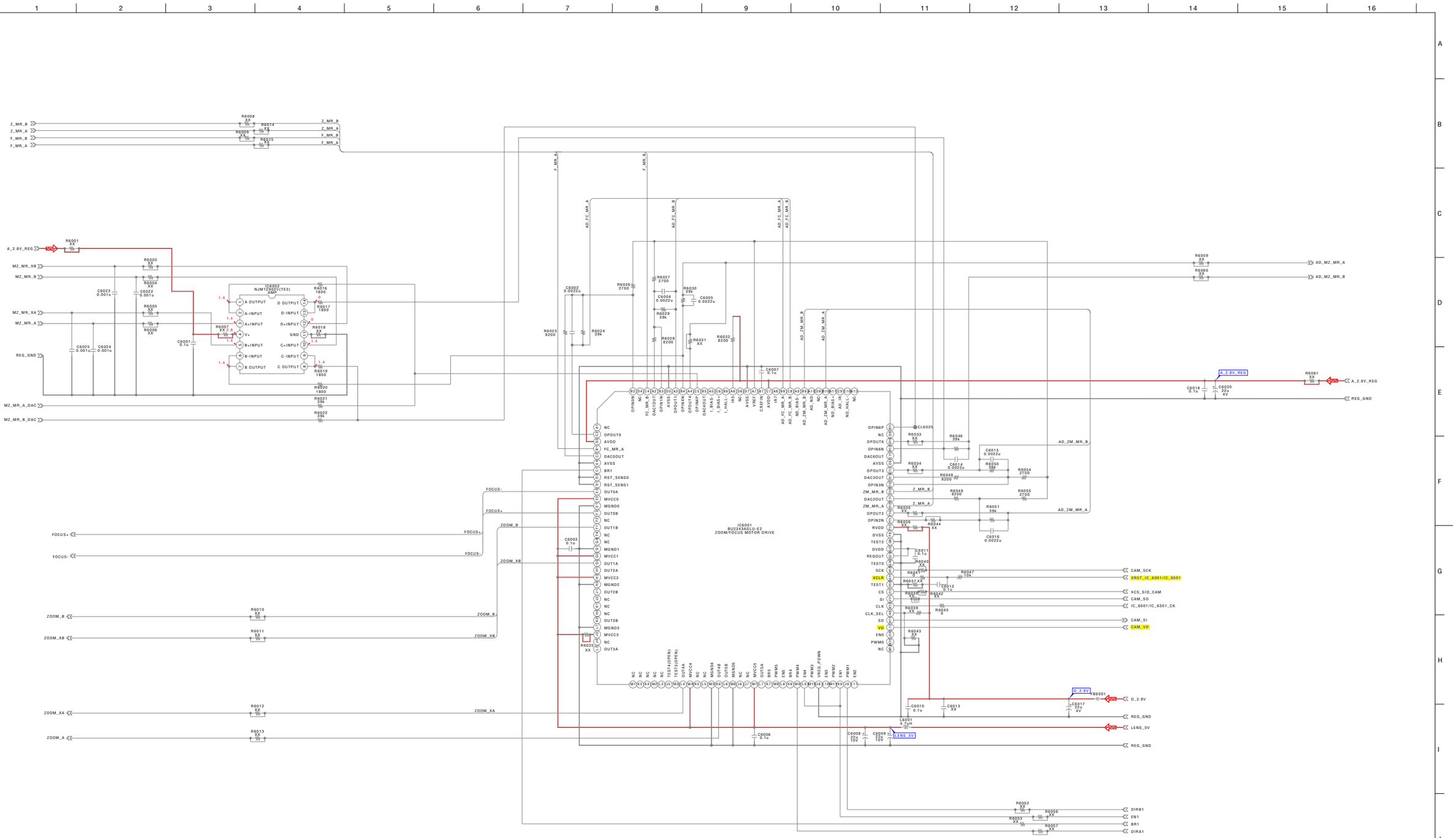
LENS CONNECTOR

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

R:REC MODE

P:PB MODE

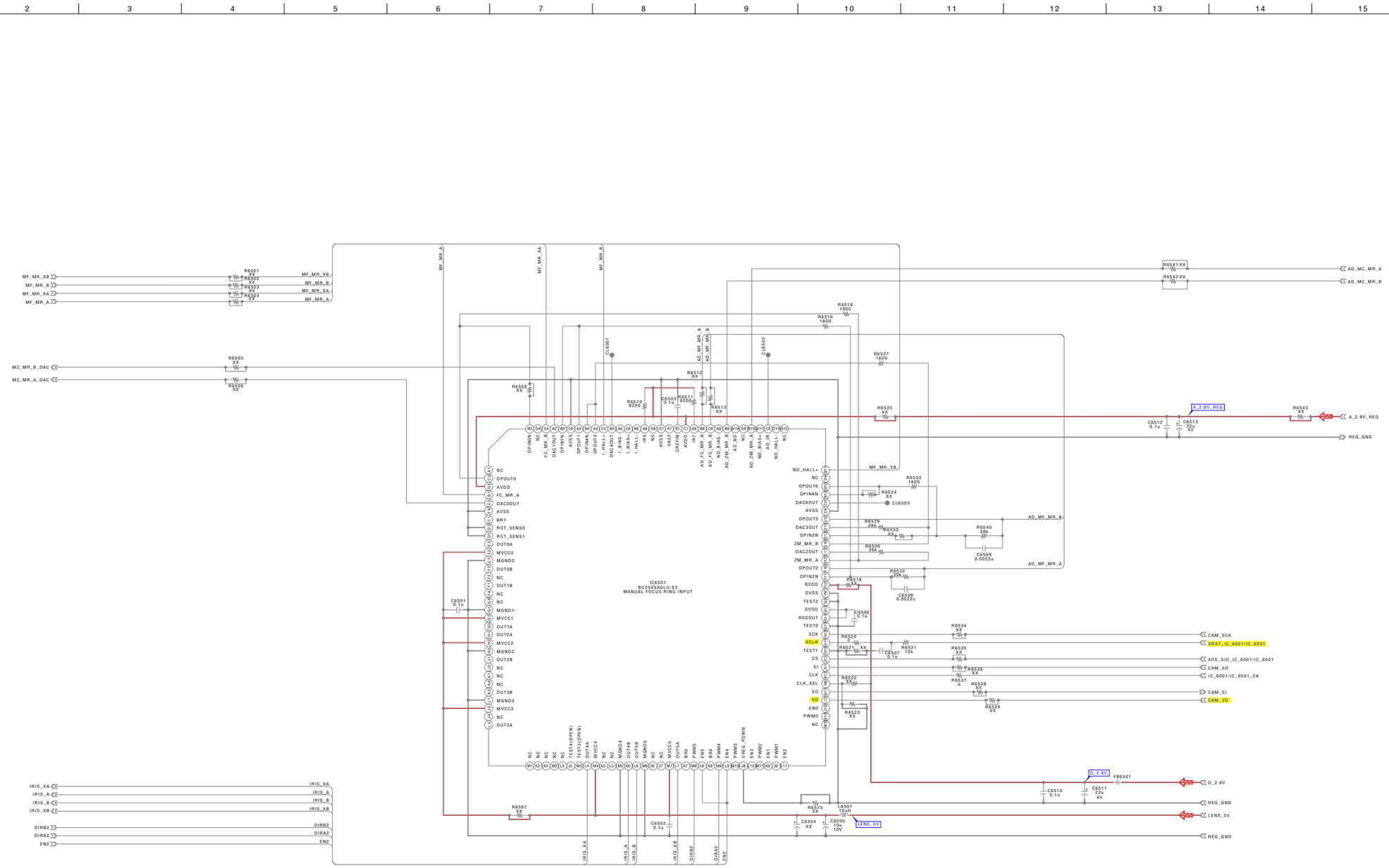


VC-543 BOARD(21/24)

ZOOM/FOCUS MOTOR DRIVE

XX MARK:NO MOUNT

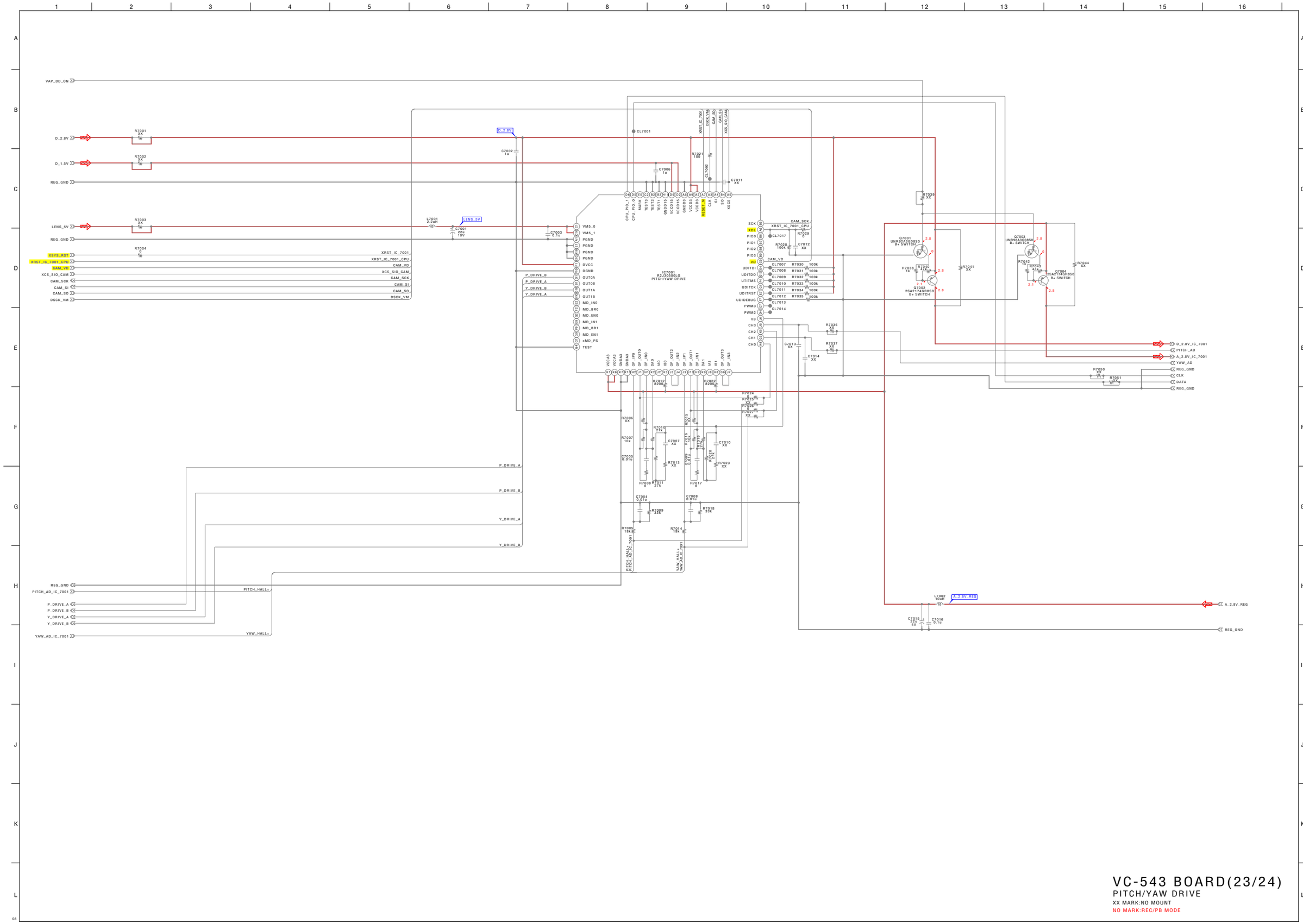
NO MARK:REC/PB MODE



VC-543 BOARD(22/24)

LENS DRIVE

XX MARK:NO MOUNT

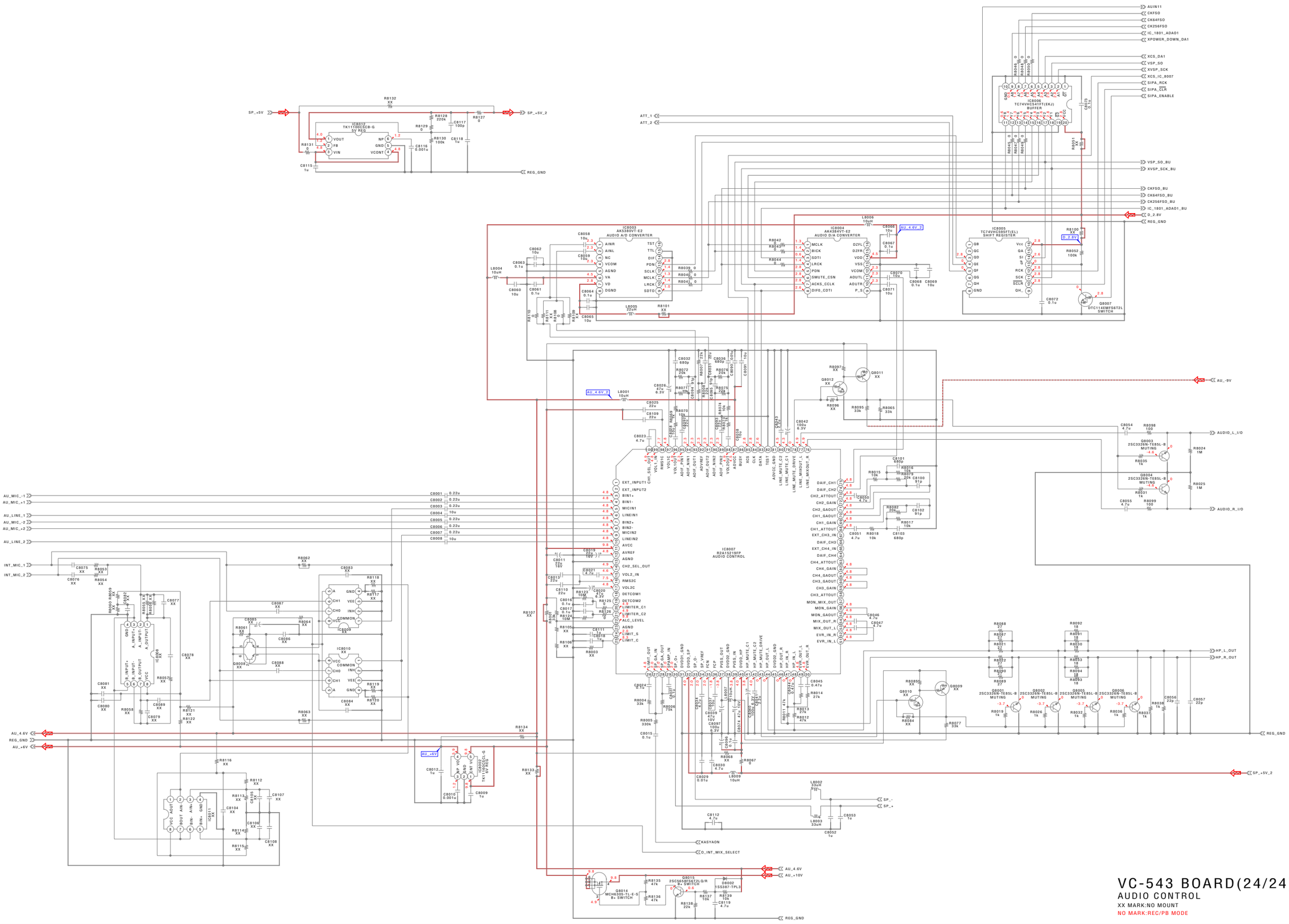


VC-543 BOARD(23/24)

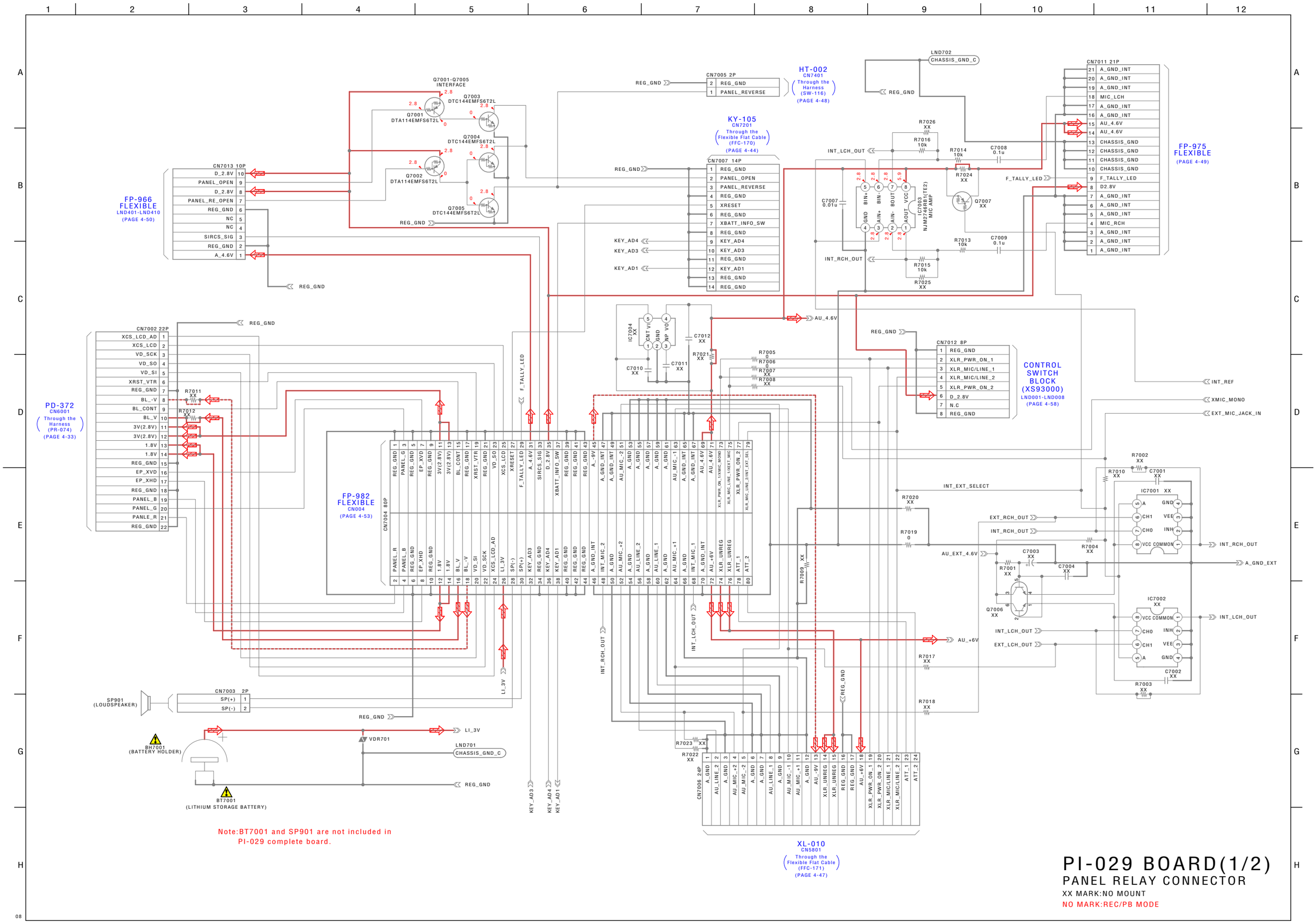
PITCH/YAW DRIVE

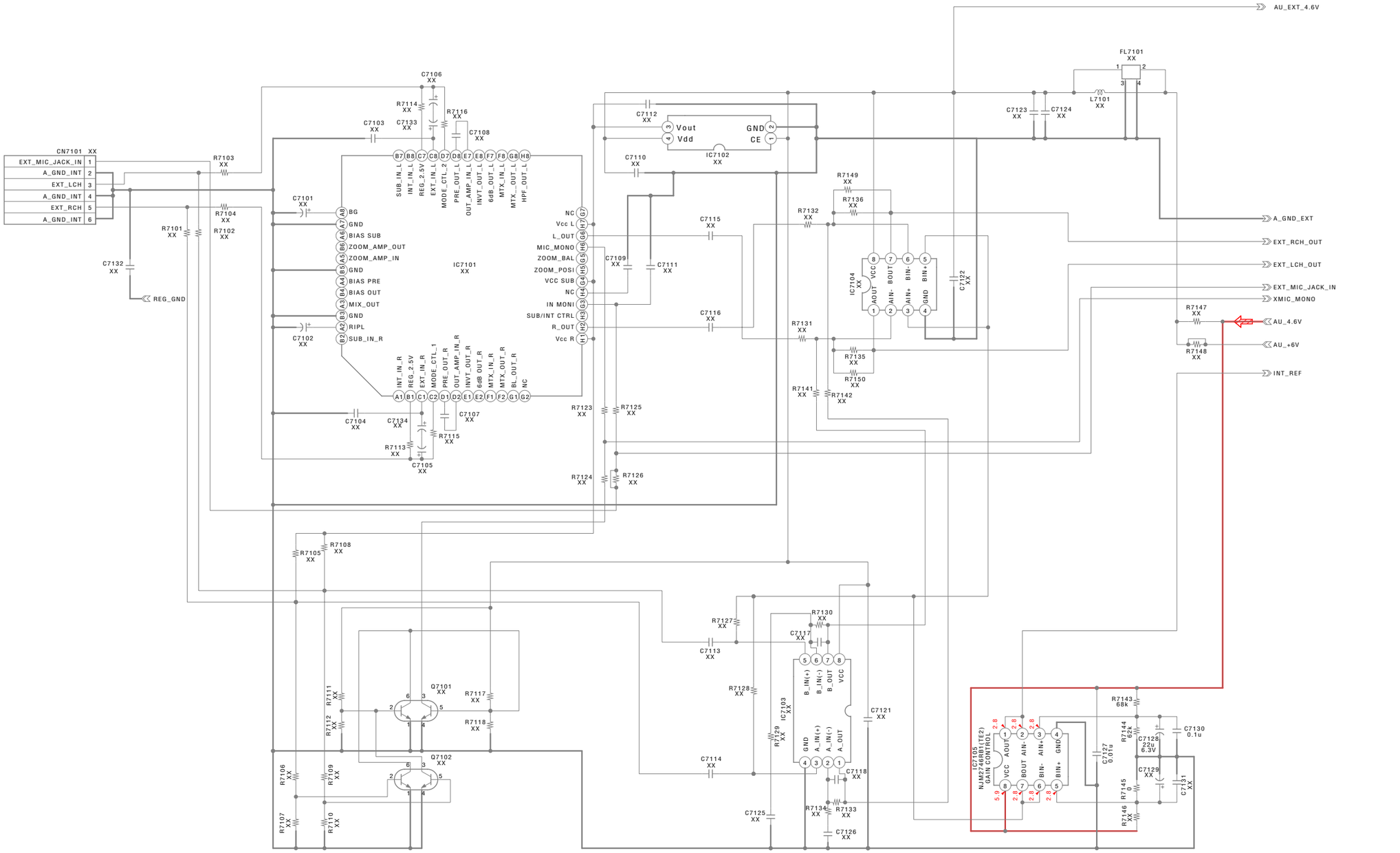
XX MARK:NO MOUNT

NO MARK:REC/PB MODE


VC-543 BOARD(24/24)
AUDIO CONTROL
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.



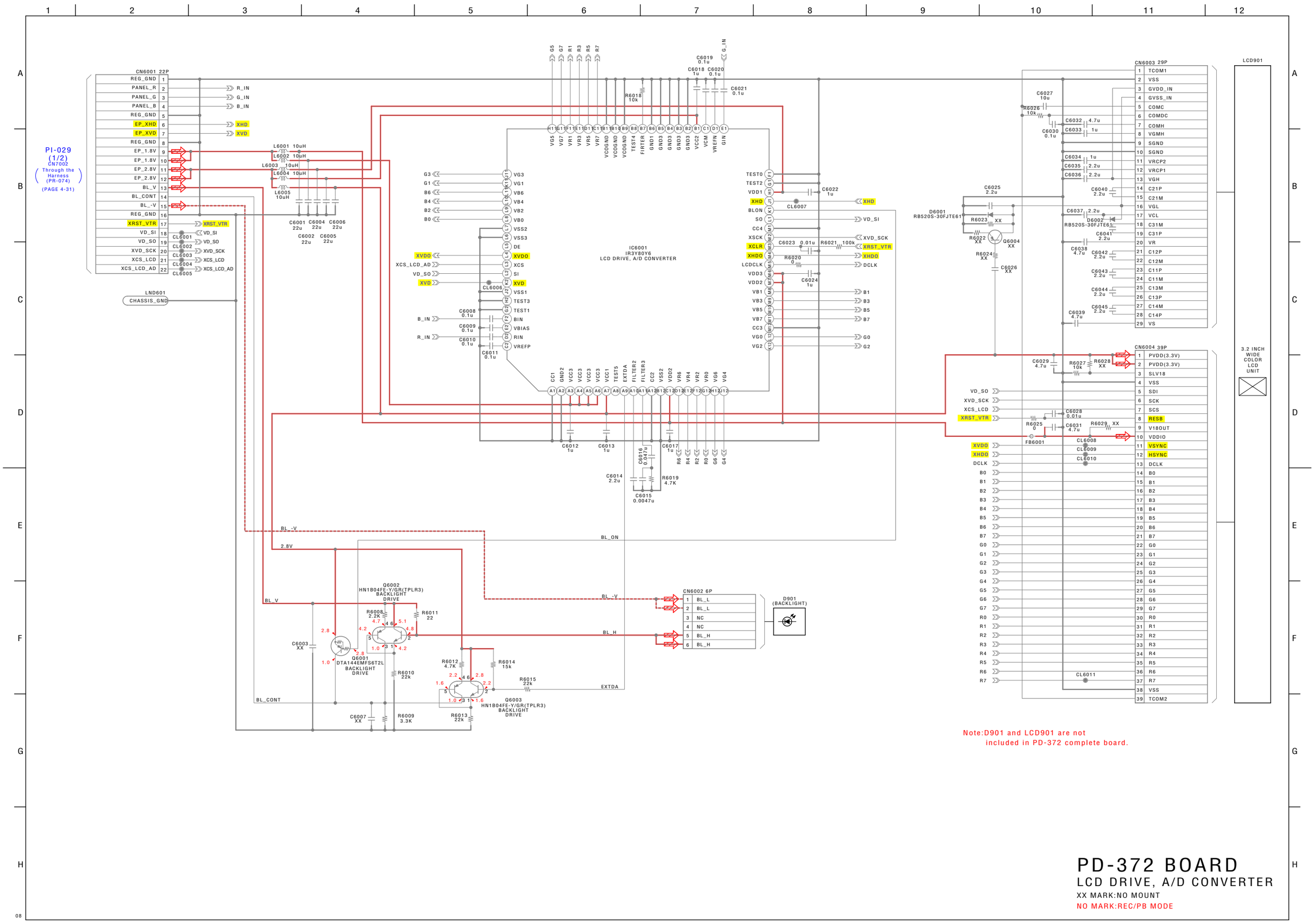


PI-029 BOARD(2/2)

EXT MIC AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE



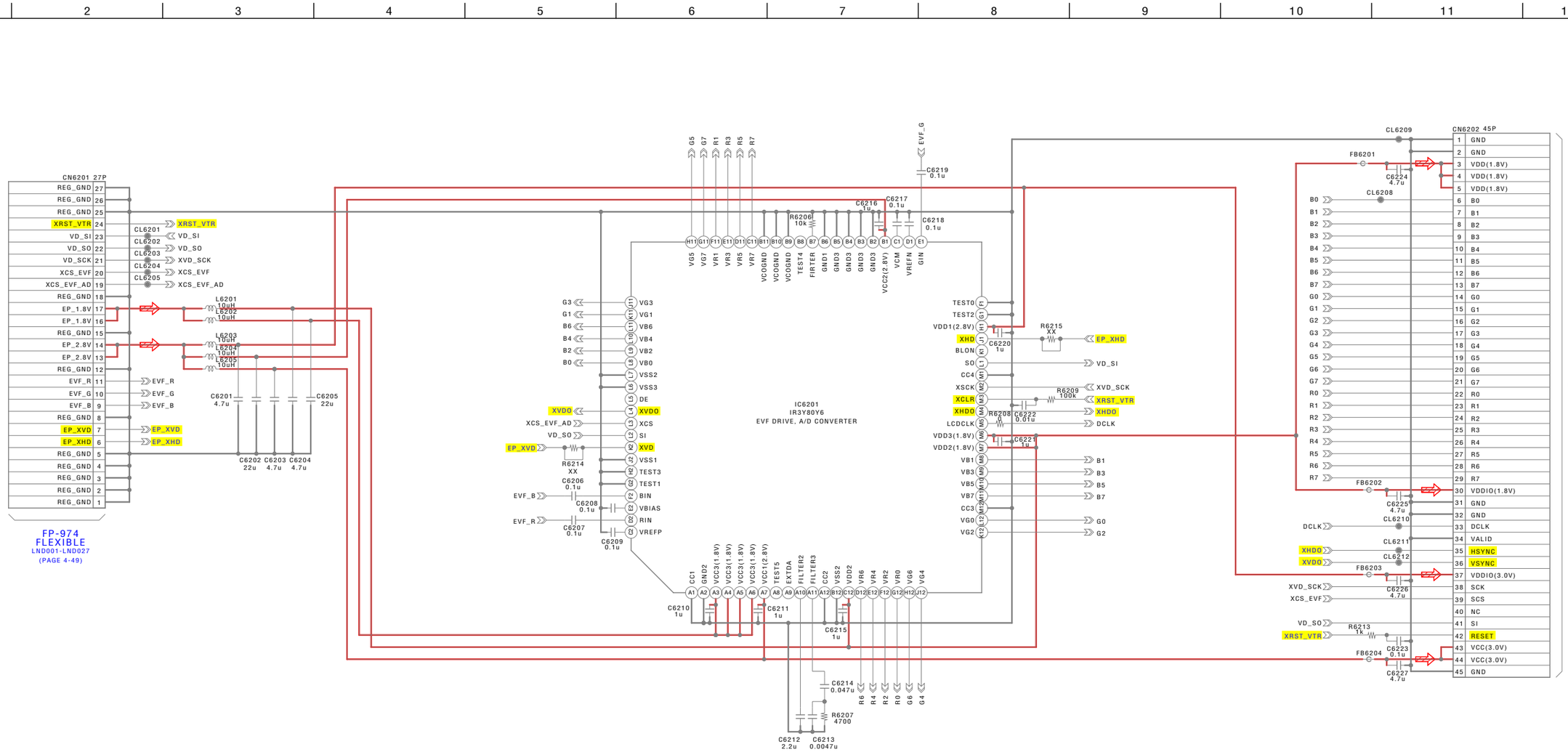
Note:D901 and LCD901 are not included in PD-372 complete board.

PD-372 BOARD

LCD DRIVE, A/D CONVERTER

XX MARK:NO MOUNT

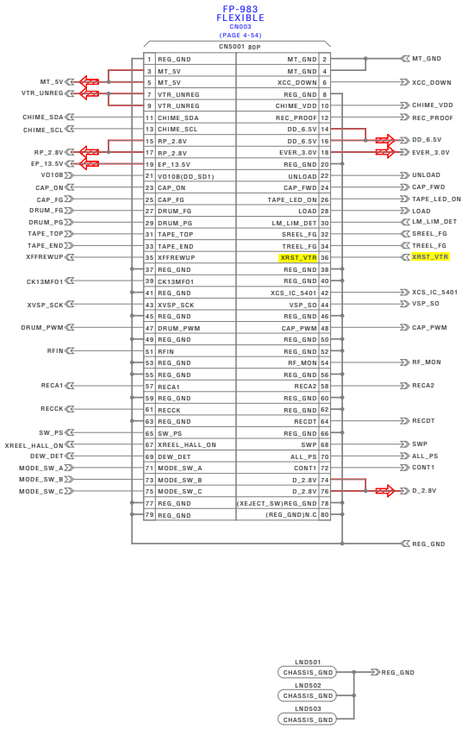
NO MARK:REC/PB MODE

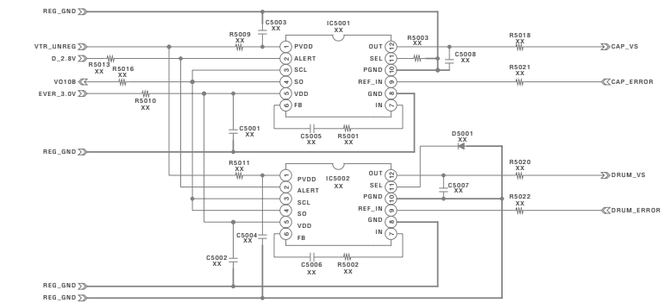


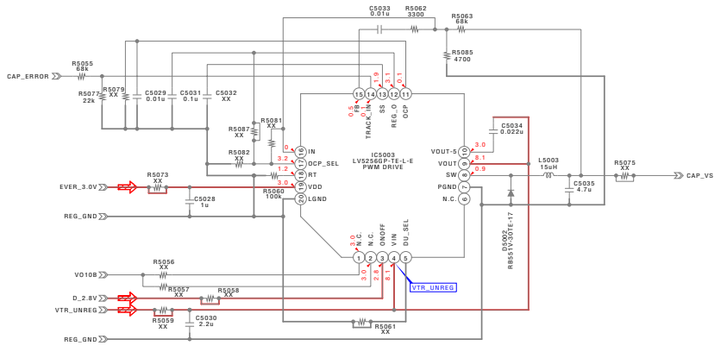
VF-178 BOARD

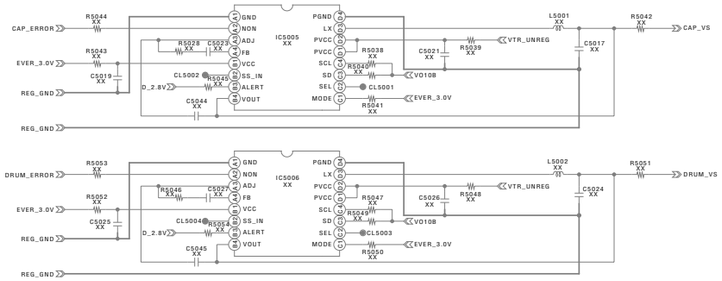
EVF DRIVE, A/D CONVERTER

XX MARK:NO MOUNT







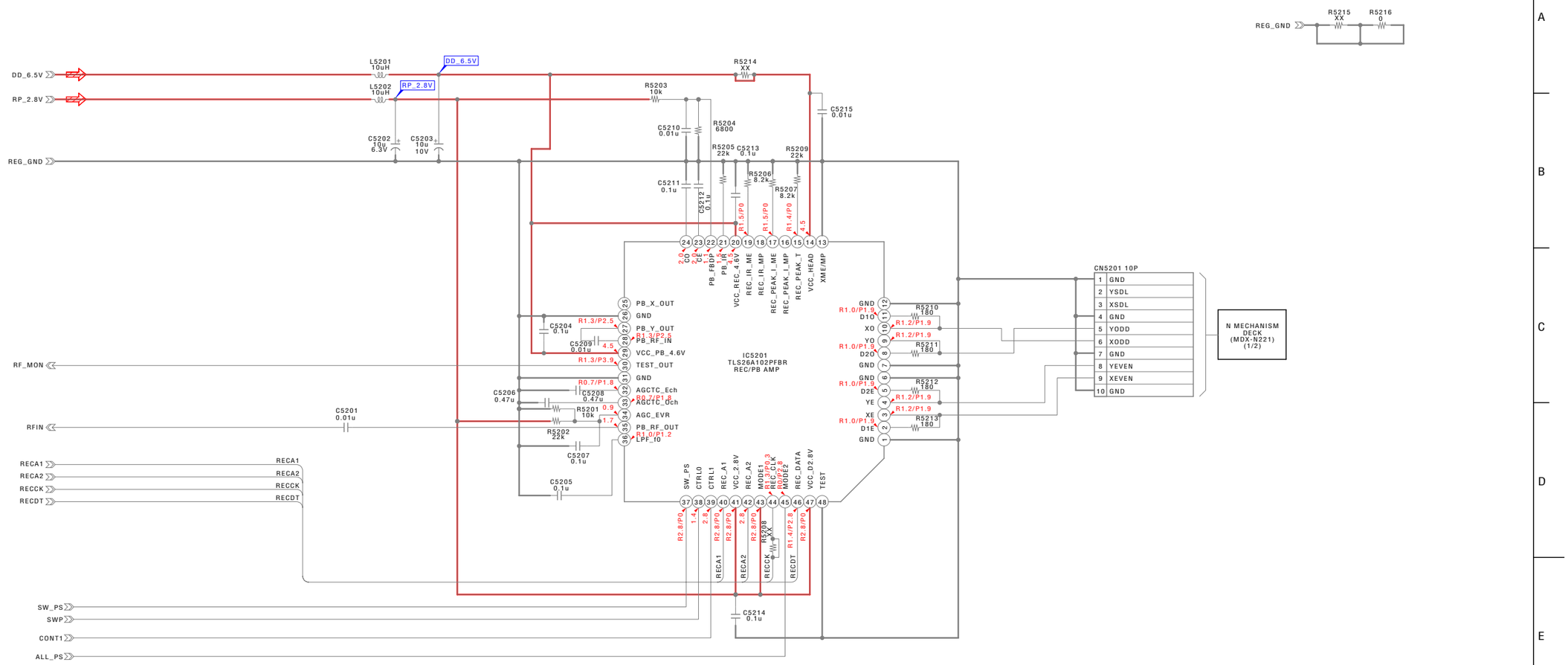


MD-141 BOARD(1/3)

CAPSTAN/DRUM MOTOR DRIVE

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

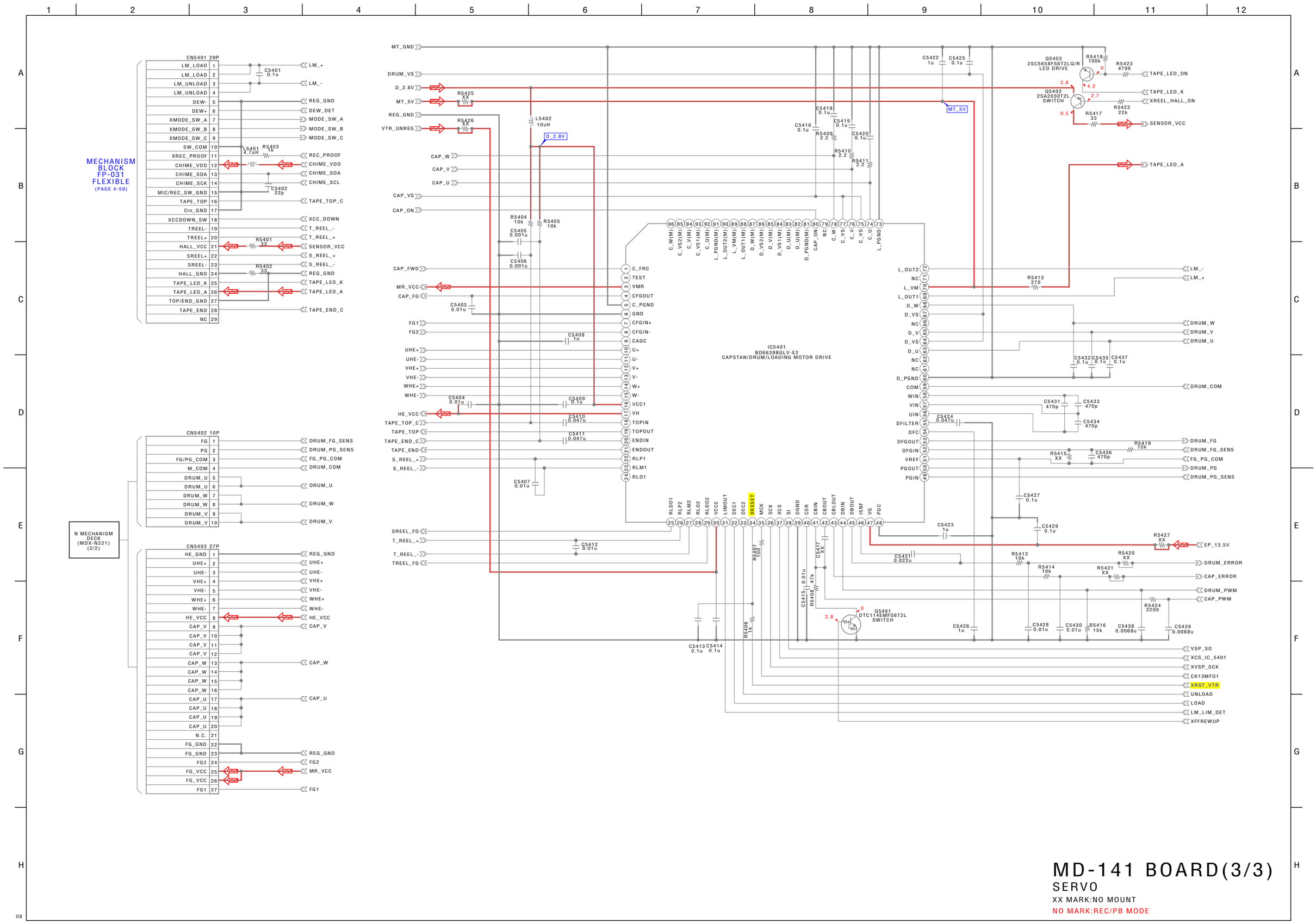


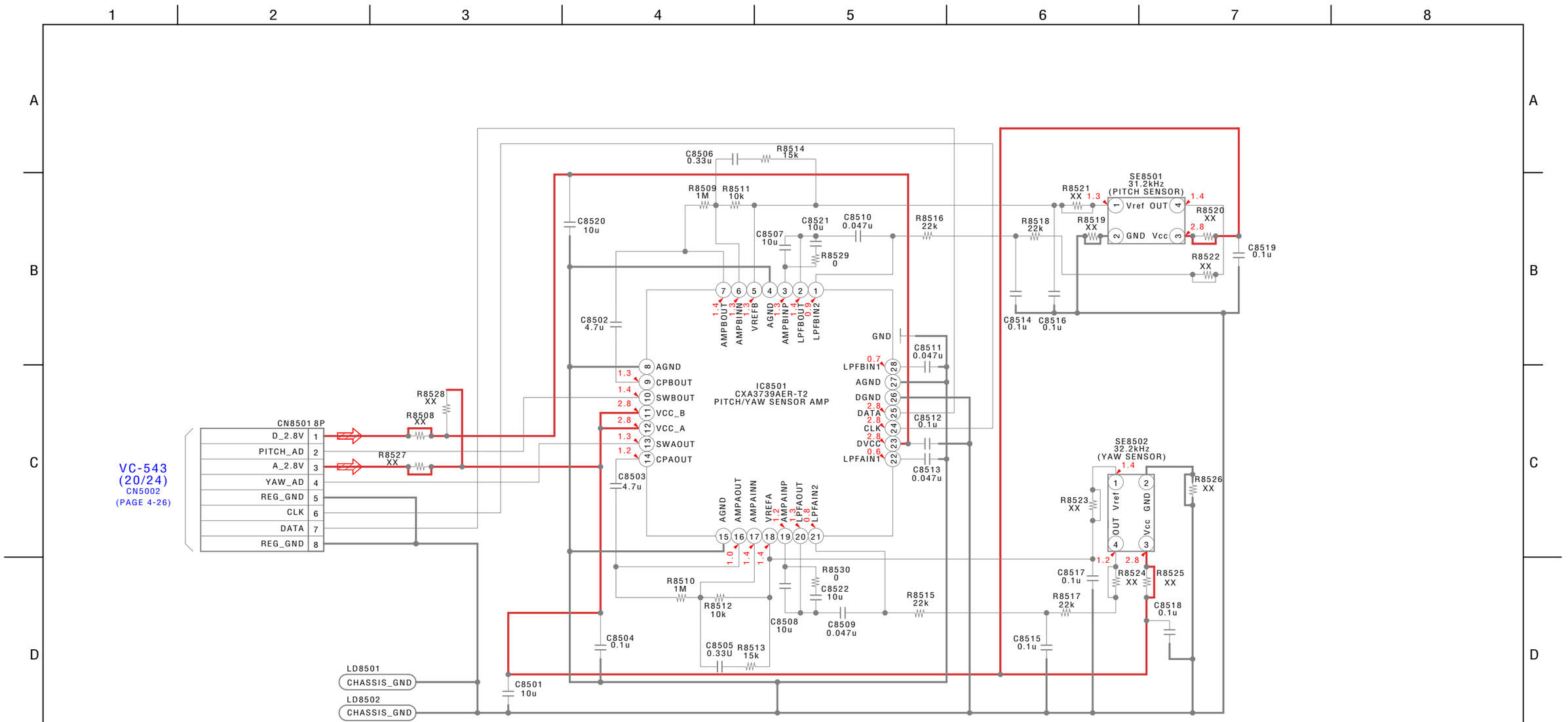
MD-141 BOARD(2/3)

REC/PB AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R:REC MODE
P:PB MODE


MECHANISM BLOCK FP-031 FLEXIBLE (PAGE 4-59)
CN5401 29P
LM_LOAD 1
LM_LOAD 2
LM_UNLOAD 3
LM_UNLOAD 4
DEW- 5
DEW+ 6
XMODE_SW_A 7
XMODE_SW_B 8
XMODE_SW_C 9
SW_COM 10
XREC_PROOF 11
CHIME_VDD 12
CHIME_SDA 13
CHIME_SCK 14
MIC/REC_SW_GND 15
TAPE_TOP 16
Cin_GND 17
XCCDOWN_SW 18
TREEL- 19
TREEL+ 20
HALL_VCC 21
SREEL+ 22
SREEL- 23
HALL_GND 24
TAPE_LED_K 25
TAPE_LED_A 26
TOP/END_GND 27
TAPE_END 28
NC 29
C5401 0.1u
L5401 4.7uH
R5403 1k
C5402 22p
R5401 33
R5402 33
LM_+
LM_-
REG_GND
DEW_DET
MODE_SW_A
MODE_SW_B
MODE_SW_C
REC_PROOF
CHIME_VDD
CHIME_SDA
CHIME_SCL
TAPE_TOP_C
XCC_DOWN
T_REEL_-
T_REEL_+
SENSOR_VCC
S_REEL_+
S_REEL_-
REG_GND
TAPE_LED_K
TAPE_LED_A
TAPE_END_C
CN5402 10P
FG 1
PG 2
FG/PG_COM 3
M_COM 4
DRUM_U 5
DRUM_U 6
DRUM_W 7
DRUM_W 8
DRUM_V 9
DRUM_V 10
DRUM_FG_SENS
DRUM_PG_SENS
FG_PG_COM
DRUM_COM
DRUM_U
DRUM_W
DRUM_V
N MECHANISM DECK (MDX-N221) (2/2)
CN5403 27P
HE_GND 1
UHE+ 2
UHE- 3
VHE+ 4
VHE- 5
WHE+ 6
WHE- 7
HE_VCC 8
CAP_V 9
CAP_V 10
CAP_V 11
CAP_V 12
CAP_W 13
CAP_W 14
CAP_W 15
CAP_W 16
CAP_U 17
CAP_U 18
CAP_U 19
CAP_U 20
N.C. 21
FG_GND 22
FG_GND 23
FG2 24
FG_VCC 25
FG_VCC 26
FG1 27
REG_GND
UHE+
UHE-
VHE+
VHE-
WHE+
WHE-
HE_VCC
CAP_V
CAP_W
CAP_U
REG_GND
FG2
MR_VCC
FG1
MT_GND
DRUM_VS
D_2.8V
MT_5V
REG_GND
VTR_UNREG
CAP_W
CAP_V
CAP_U
CAP_VS
CAP_ON
CAP_FWD
MR_VCC
CAP_FG
FG1
FG2
UHE+
UHE-
VHE+
VHE-
WHE+
WHE-
HE_VCC
TAPE_TOP_C
TAPE_TOP
TAPE_END_C
TAPE_END
S_REEL_+
S_REEL_-
SREEL_FG
T_REEL_+
T_REEL_-
TREEL_FG
R5425 XX
R5426 XX
L5402 10uH
R5404 10k
R5405 10k
C5405 0.001u
C5406 0.001u
C5403 0.01u
C5408 1u
C5404 0.01u
C5409 0.1u
C5410 0.047u
C5411 0.047u
C5407 0.01u
C5412 0.01u
C5413 0.1u
C5414 0.1u
C5422 1u
C5425 0.1u
C5418 0.1u
C5419 0.1u
C5416 0.1u
C5420 0.1u
R5409 2.2
R5410 2.2
R5411 2.2
C_W(M) C_VS2(M) C_V(M) C_VS1(M) C_U(M) L_PGND(M) L_OUT2(M) L_VM(M) L_OUT1(M) D_W(M) D_VS2(M) D_V(M) D_VS1(M) D_U(M) D_U(M) D_PGND(M) CAP_ON NC C_W C_VS C_V C_VS C_U L_PGND
96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73
C_FRC 1
TEST 2
VMR 3
CFGOUT 4
C_PGND 5
GND 6
CFGIN+ 7
CFGIN- 8
CAGC 9
U+ 10
U- 11
V+ 12
V- 13
W+ 14
W- 15
VCC1 16
VH 17
TOPIN 18
TOPOUT 19
ENDIN 20
ENDOUT 21
RLP1 22
RLM1 23
RLO1 24
RLDO1 RLP2 RLM2 RLO2 RLDO2 VCC2 LIMOUT DEC1 DEC2 XRESET MCK SCK XCS SI DGND CSR CBIN CBOUT CBLOUT DBIN DBOUT ISNF VG PGC
25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
IC5401
BD6639BGLV-E2
CAPSTAN/DRUM/LOADING MOTOR DRIVE
L_OUT2 72
NC 71
L_VM 70
L_OUT1 69
D_W 68
D_VS 67
NC 66
D_V 65
D_VS 64
D_U 63
NC 62
NC 61
D_PGND 60
COM 59
WIN 58
VIN 57
UIN 56
DFILTER 55
DFC 54
DFGOUT 53
DFGIN 52
VREF 51
PGOUT 50
PGIN 49
R5413 270
C5432 0.1u
C5435 0.1u
C5437 0.1u
C5431 470p
C5433 470p
C5434 470p
C5424 0.047u
R5419 10k
R5415 XX
C5436 470p
C5427 0.1u
C5429 0.1u
C5423 1u
C5421 0.022u
R5412 10k
R5414 10k
R5421 XX
R5420 XX
R5424 2200
C5426 1u
C5428 0.01u
C5430 0.01u
R5416 15k
C5438 0.0068u
C5439 0.0068u
C5417 XX
C5415 0.01u
R5408 47k
R5407 100k
R5406 XX
Q5401 DTC114EMFS6T2L SWITCH
Q5403 2SC5658FS6T2LO/R LED DRIVE
Q5402 2SA2030T2L SWITCH
R5418 100k
R5423 4700
R5422 22k
R5417 33
0
2.8
4.2
2.7
0.5
TAPE_LED_ON
TAPE_LED_K
XREEL_HALL_ON
SENSOR_VCC
TAPE_LED_A
EP_13.5V
DRUM_ERROR
CAP_ERROR
DRUM_PWM
CAP_PWM
LM_-
LM_+
DRUM_W
DRUM_V
DRUM_U
DRUM_COM
DRUM_FG
DRUM_FG_SENS
FG_PG_COM
DRUM_PG
DRUM_PG_SENS
VSP_SO
XCS_IC_5401
XVSP_SCK
CK13MFO1
XRST_VTR
UNLOAD
LOAD
LM_LIM_DET
XFFREWUP
MD-141 BOARD(3/3)
SERVO
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

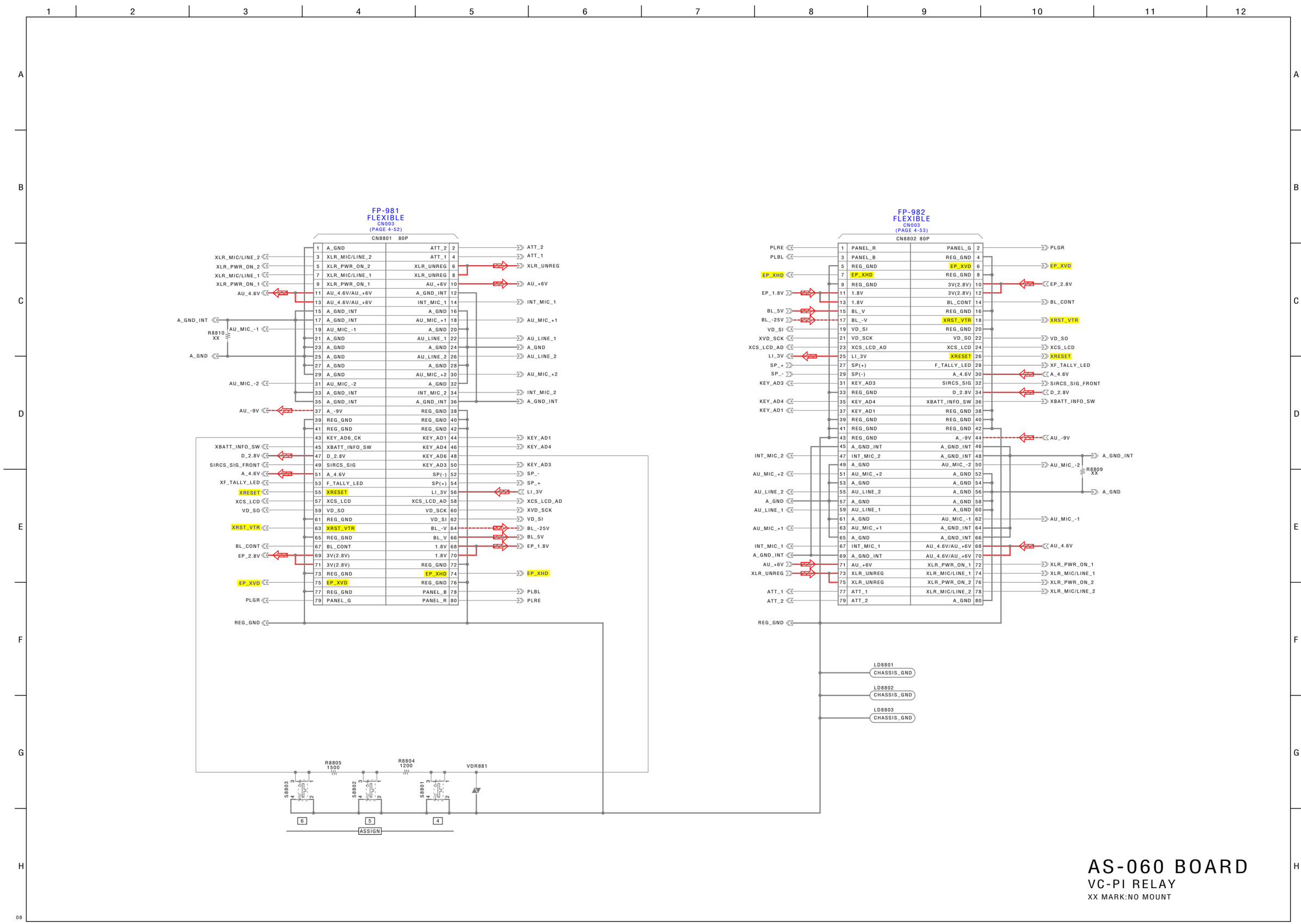


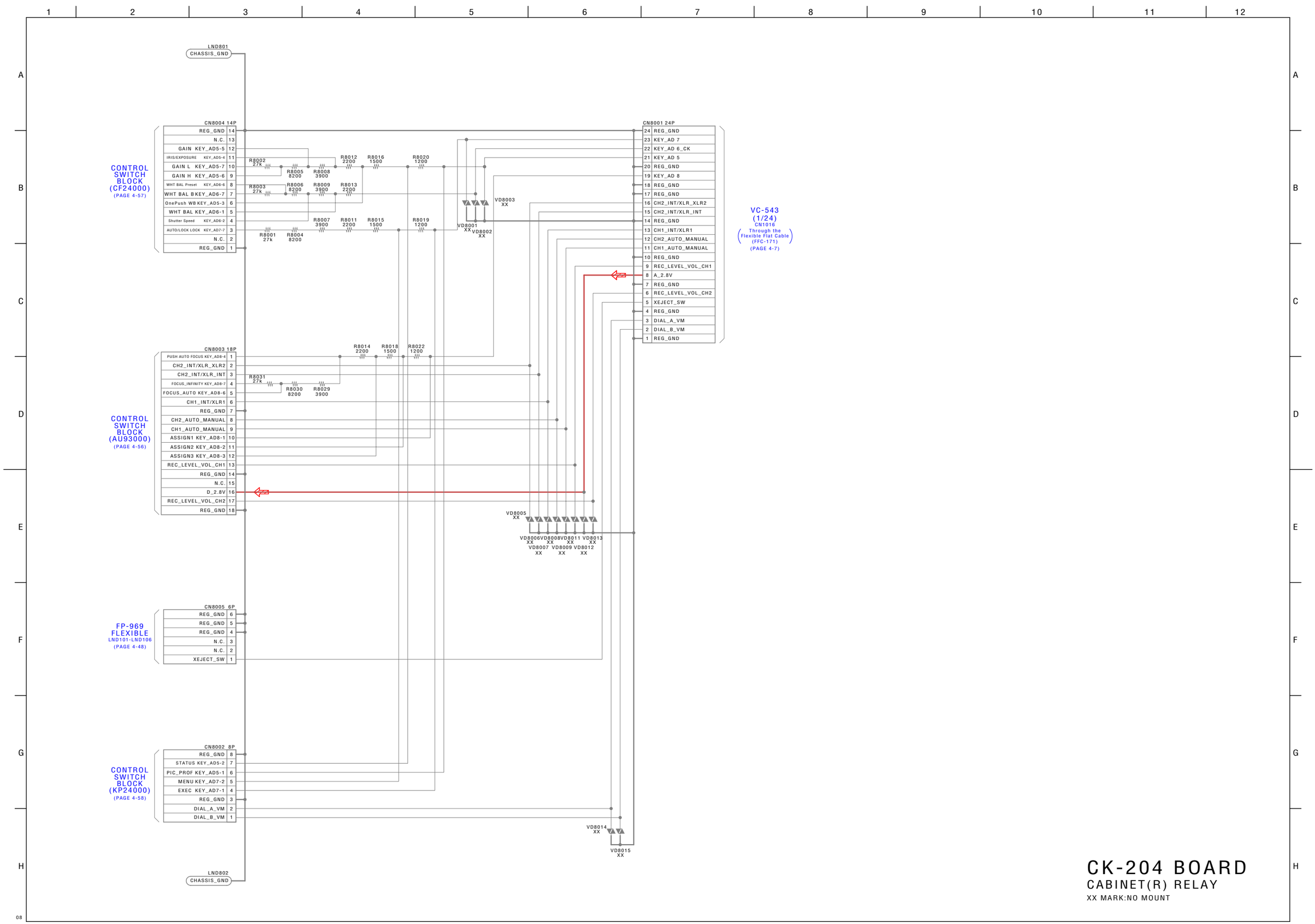
GY-014 BOARD

PITCH/YAW SENSOR AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE

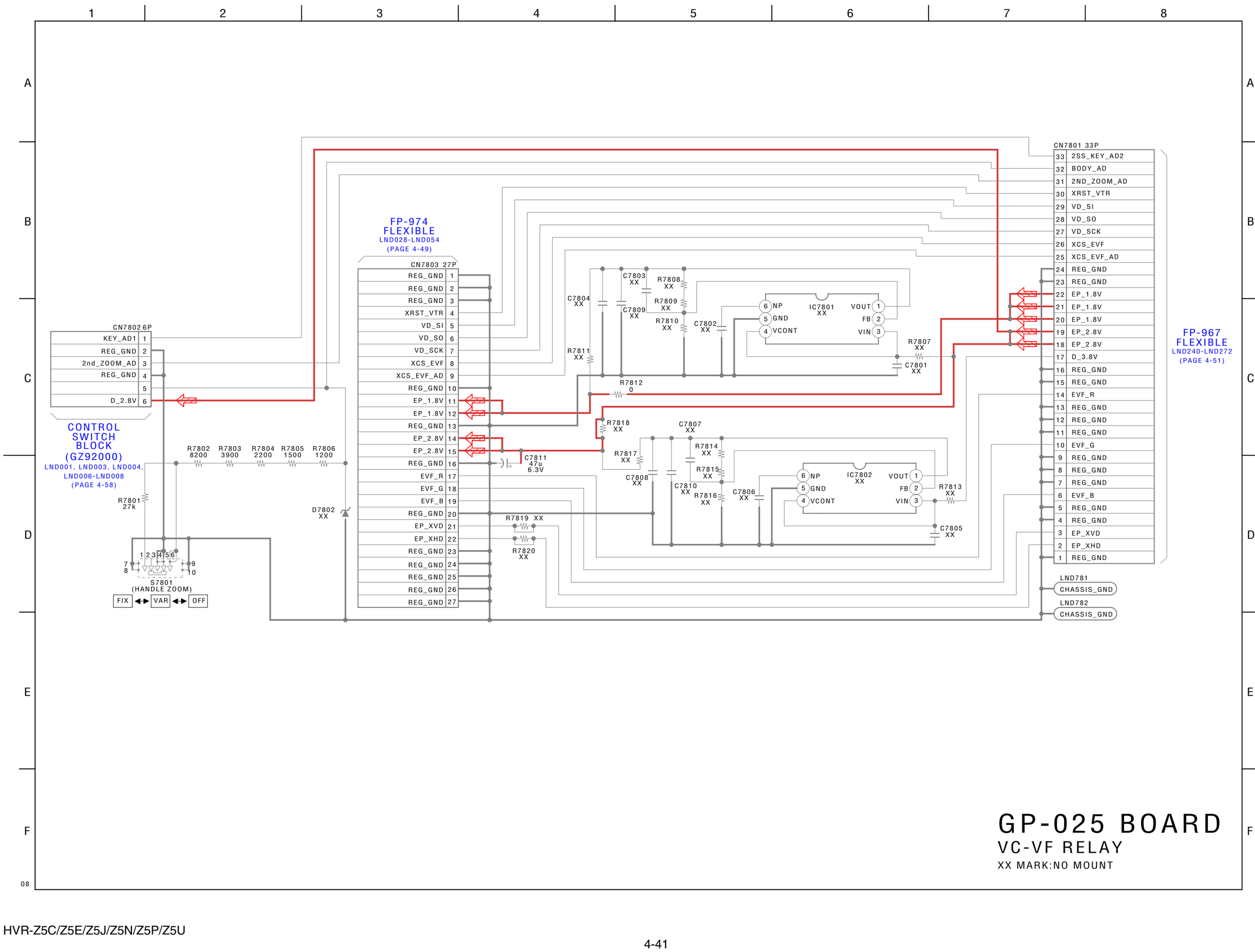

FP-981
FLEXIBLE
CN003
(PAGE 4-52)
CN8801 80P
1 A_GND
2 ATT_2
3 XLR_MIC/LINE_2
4 ATT_1
5 XLR_PWR_ON_2
6 XLR_UNREG
7 XLR_MIC/LINE_1
8 XLR_UNREG
9 XLR_PWR_ON_1
10 AU_+6V
11 AU_4.6V/AU_+6V
12 A_GND_INT
13 AU_4.6V/AU_+6V
14 INT_MIC_1
15 A_GND_INT
16 A_GND
17 A_GND_INT
18 AU_MIC_+1
19 AU_MIC_-1
20 A_GND
21 A_GND
22 AU_LINE_1
23 A_GND
24 A_GND
25 A_GND
26 AU_LINE_2
27 A_GND
28 A_GND
29 A_GND
30 AU_MIC_+2
31 AU_MIC_-2
32 A_GND
33 A_GND_INT
34 INT_MIC_2
35 A_GND_INT
36 A_GND_INT
37 A_-9V
38 REG_GND
39 REG_GND
40 REG_GND
41 REG_GND
42 REG_GND
43 KEY_AD6_CK
44 KEY_AD1
45 XBATT_INFO_SW
46 KEY_AD4
47 D_2.8V
48 KEY_AD6
49 SIRCS_SIG
50 KEY_AD3
51 A_4.6V
52 SP(-)
53 F_TALLY_LED
54 SP(+)
55 XRESET
56 LI_3V
57 XCS_LCD
58 XCS_LCD_AD
59 VD_SO
60 VD_SCK
61 REG_GND
62 VD_SI
63 XRST_VTR
64 BL_-V
65 REG_GND
66 BL_V
67 BL_CONT
68 1.8V
69 3V(2.8V)
70 1.8V
71 3V(2.8V)
72 REG_GND
73 REG_GND
74 EP_XHD
75 EP_XVD
76 REG_GND
77 REG_GND
78 PANEL_B
79 PANEL_G
80 PANEL_R
ATT_2
ATT_1
XLR_UNREG
AU_+6V
INT_MIC_1
AU_MIC_+1
AU_LINE_1
A_GND
AU_LINE_2
AU_MIC_+2
INT_MIC_2
A_GND_INT
KEY_AD1
KEY_AD4
KEY_AD3
SP_-
SP_+
LI_3V
XCS_LCD_AD
XVD_SCK
VD_SI
BL_-25V
BL_5V
EP_1.8V
EP_XHD
PLBL
PLRE
XLR_MIC/LINE_2
XLR_PWR_ON_2
XLR_MIC/LINE_1
XLR_PWR_ON_1
AU_4.6V
A_GND_INT
AU_MIC_-1
R8810
XX
A_GND
AU_MIC_-2
AU_-9V
XBATT_INFO_SW
D_2.8V
SIRCS_SIG_FRONT
A_4.6V
XF_TALLY_LED
XRESET
XCS_LCD
VD_SO
XRST_VTR
BL_CONT
EP_2.8V
EP_XVD
PLGR
REG_GND
FP-982
FLEXIBLE
CN003
(PAGE 4-53)
CN8802 80P
1 PANEL_R
2 PLGR
3 PANEL_B
4 REG_GND
5 REG_GND
6 EP_XVD
7 EP_XHD
8 REG_GND
9 REG_GND
10 3V(2.8V)
11 1.8V
12 3V(2.8V)
13 1.8V
14 BL_CONT
15 BL_V
16 REG_GND
17 BL_-V
18 XRST_VTR
19 VD_SI
20 REG_GND
21 VD_SCK
22 VD_SO
23 XCS_LCD_AD
24 XCS_LCD
25 LI_3V
26 XRESET
27 SP(+)
28 F_TALLY_LED
29 SP(-)
30 A_4.6V
31 KEY_AD3
32 SIRCS_SIG
33 REG_GND
34 D_2.8V
35 KEY_AD4
36 XBATT_INFO_SW
37 KEY_AD1
38 REG_GND
39 REG_GND
40 REG_GND
41 REG_GND
42 REG_GND
43 REG_GND
44 A_-9V
45 A_GND_INT
46 A_GND_INT
47 INT_MIC_2
48 A_GND_INT
49 A_GND
50 AU_MIC_-2
51 AU_MIC_+2
52 A_GND
53 A_GND
54 A_GND
55 AU_LINE_2
56 A_GND
57 A_GND
58 A_GND
59 AU_LINE_1
60 A_GND
61 A_GND
62 AU_MIC_-1
63 AU_MIC_+1
64 A_GND_INT
65 A_GND
66 A_GND_INT
67 INT_MIC_1
68 AU_4.6V/AU_+6V
69 A_GND_INT
70 AU_4.6V/AU_+6V
71 AU_+6V
72 XLR_PWR_ON_1
73 XLR_UNREG
74 XLR_MIC/LINE_1
75 XLR_UNREG
76 XLR_PWR_ON_2
77 ATT_1
78 XLR_MIC/LINE_2
79 ATT_2
80 A_GND
PLRE
PLBL
EP_XHD
EP_1.8V
BL_5V
BL_-25V
VD_SI
XVD_SCK
XCS_LCD_AD
LI_3V
SP_+
SP_-
KEY_AD3
KEY_AD4
KEY_AD1
REG_GND
PLGR
EP_XVD
EP_2.8V
BL_CONT
XRST_VTR
VD_SO
XCS_LCD
XRESET
XF_TALLY_LED
A_4.6V
SIRCS_SIG_FRONT
D_2.8V
XBATT_INFO_SW
AU_-9V
A_GND_INT
AU_MIC_-2
R8809
XX
A_GND
AU_MIC_-1
AU_4.6V
XLR_PWR_ON_1
XLR_MIC/LINE_1
XLR_PWR_ON_2
XLR_MIC/LINE_2
INT_MIC_2
AU_MIC_+2
AU_LINE_2
A_GND
AU_LINE_1
AU_MIC_+1
INT_MIC_1
A_GND_INT
AU_+6V
XLR_UNREG
ATT_1
ATT_2
REG_GND
LD8801
CHASSIS_GND
LD8802
CHASSIS_GND
LD8803
CHASSIS_GND
R8805
1500
R8804
1200
VDR881
S8803
S8802
S8801
6
5
4
ASSIGN
AS-060 BOARD
VC-PI RELAY
XX MARK:NO MOUNT

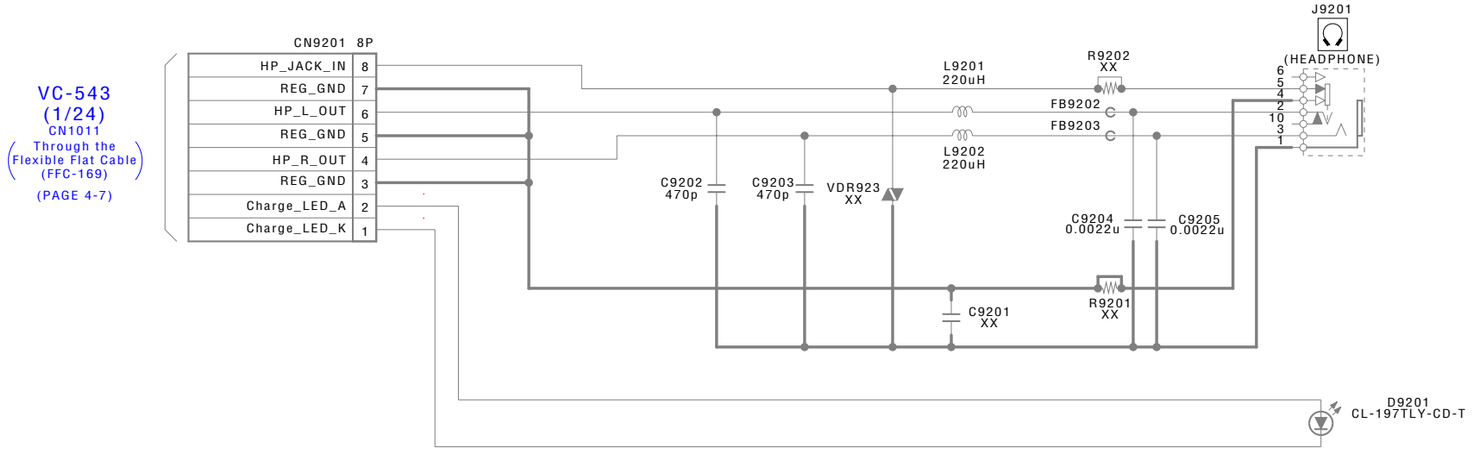


CK-204 BOARD

CABINET(R) RELAY

XX MARK:NO MOUNT

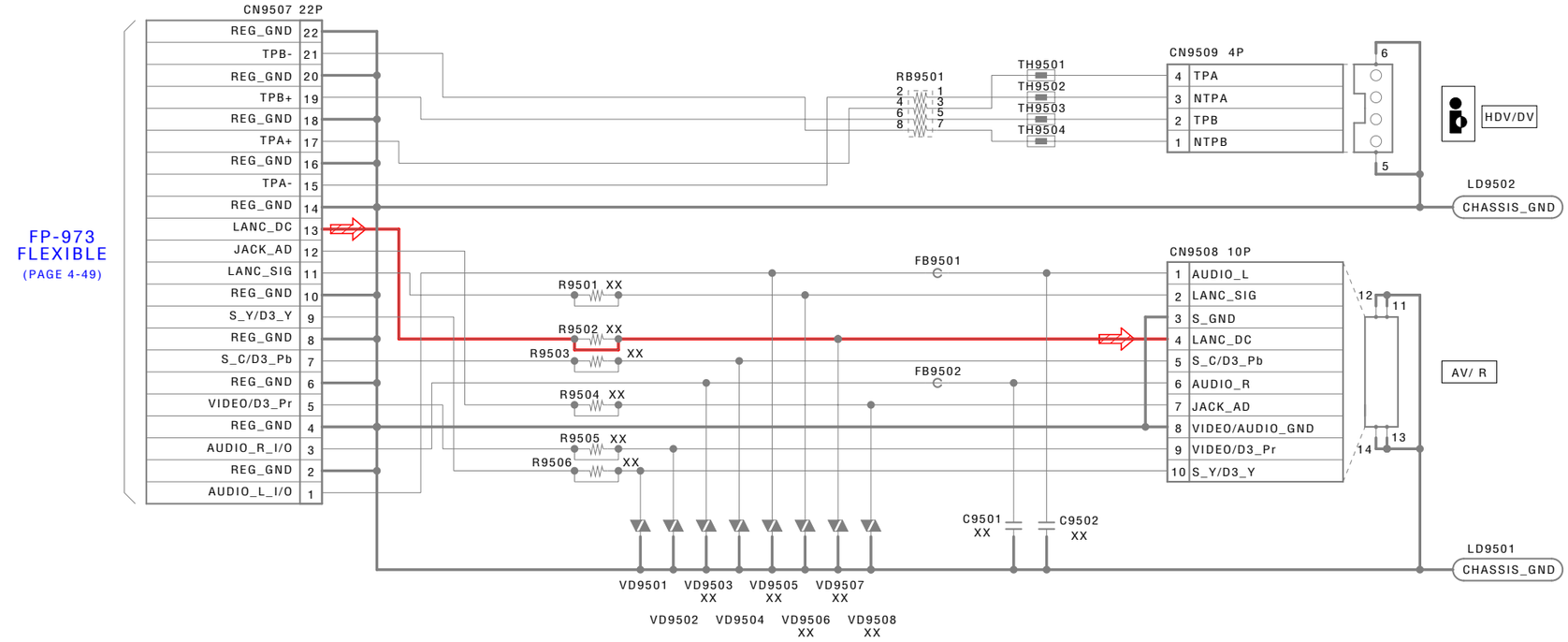

CN7802 6P
KEY_AD1 1
REG_GND 2
2nd_ZOOM_AD 3
REG_GND 4
5
D_2.8V 6
CONTROL SWITCH BLOCK (GZ92000)
LND001, LND003, LND004, LND006-LND008
(PAGE 4-58)
R7801 27k
R7802 8200
R7803 3900
R7804 2200
R7805 1500
R7806 1200
D7802 XX
S7801 (HANDLE ZOOM)
FIX
VAR
OFF
FP-974 FLEXIBLE
LND028-LND054
(PAGE 4-49)
CN7803 27P
REG_GND 1
REG_GND 2
REG_GND 3
XRST_VTR 4
VD_SI 5
VD_SO 6
VD_SCK 7
XCS_EVF 8
XCS_EVF_AD 9
REG_GND 10
EP_1.8V 11
EP_1.8V 12
REG_GND 13
EP_2.8V 14
EP_2.8V 15
REG_GND 16
EVF_R 17
EVF_G 18
EVF_B 19
REG_GND 20
EP_XVD 21
EP_XHD 22
REG_GND 23
REG_GND 24
REG_GND 25
REG_GND 26
REG_GND 27
C7811 47u 6.3V
R7819 XX
R7820 XX
C7803 XX
C7804 XX
C7809 XX
R7808 XX
R7809 XX
R7810 XX
C7802 XX
R7811 XX
IC7801 XX
6 NP
5 GND
4 VCONT
VOUT 1
FB 2
VIN 3
R7807 XX
C7801 XX
R7812 0
R7818 XX
C7807 XX
R7817 XX
C7808 XX
R7814 XX
R7815 XX
C7810 XX
R7816 XX
C7806 XX
IC7802 XX
6 NP
5 GND
4 VCONT
VOUT 1
FB 2
VIN 3
R7813 XX
C7805 XX
CN7801 33P
33 2SS_KEY_AD2
32 BODY_AD
31 2ND_ZOOM_AD
30 XRST_VTR
29 VD_SI
28 VD_SO
27 VD_SCK
26 XCS_EVF
25 XCS_EVF_AD
24 REG_GND
23 REG_GND
22 EP_1.8V
21 EP_1.8V
20 EP_1.8V
19 EP_2.8V
18 EP_2.8V
17 D_3.8V
16 REG_GND
15 REG_GND
14 EVF_R
13 REG_GND
12 REG_GND
11 REG_GND
10 EVF_G
9 REG_GND
8 REG_GND
7 REG_GND
6 EVF_B
5 REG_GND
4 REG_GND
3 EP_XVD
2 EP_XHD
1 REG_GND
FP-967 FLEXIBLE
LND240-LND272
(PAGE 4-51)
LND781
CHASSIS_GND
LND782
CHASSIS_GND
GP-025 BOARD
VC-VF RELAY
XX MARK:NO MOUNT



HP-153 BOARD

HEADPHONES JACK

XX MARK:NO MOUNT

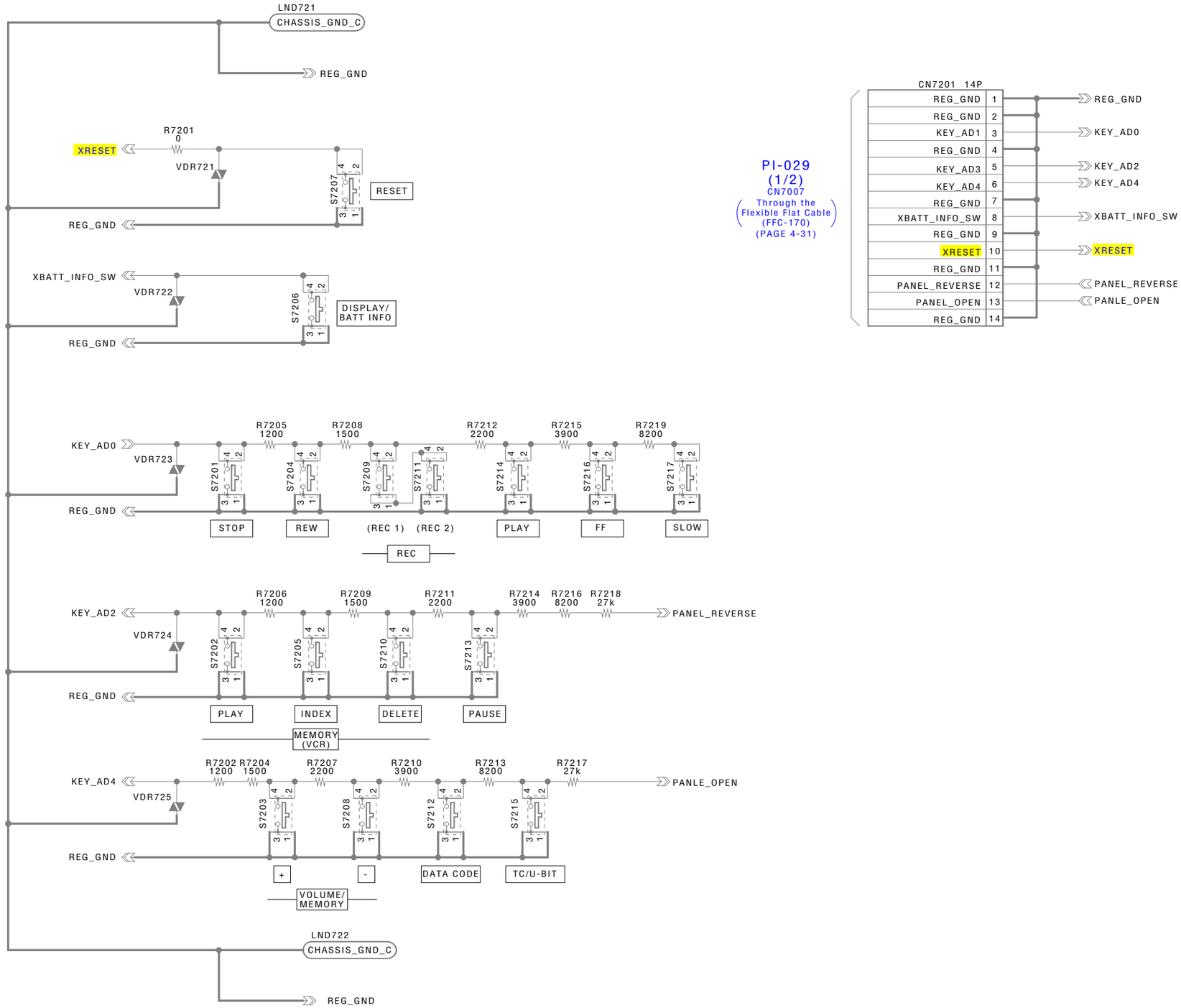


FP-973
FLEXIBLE
(PAGE 4-49)

JK-376 BOARD

HDV/DV, A/V R CONNECTOR

XX MARK:NO MOUNT

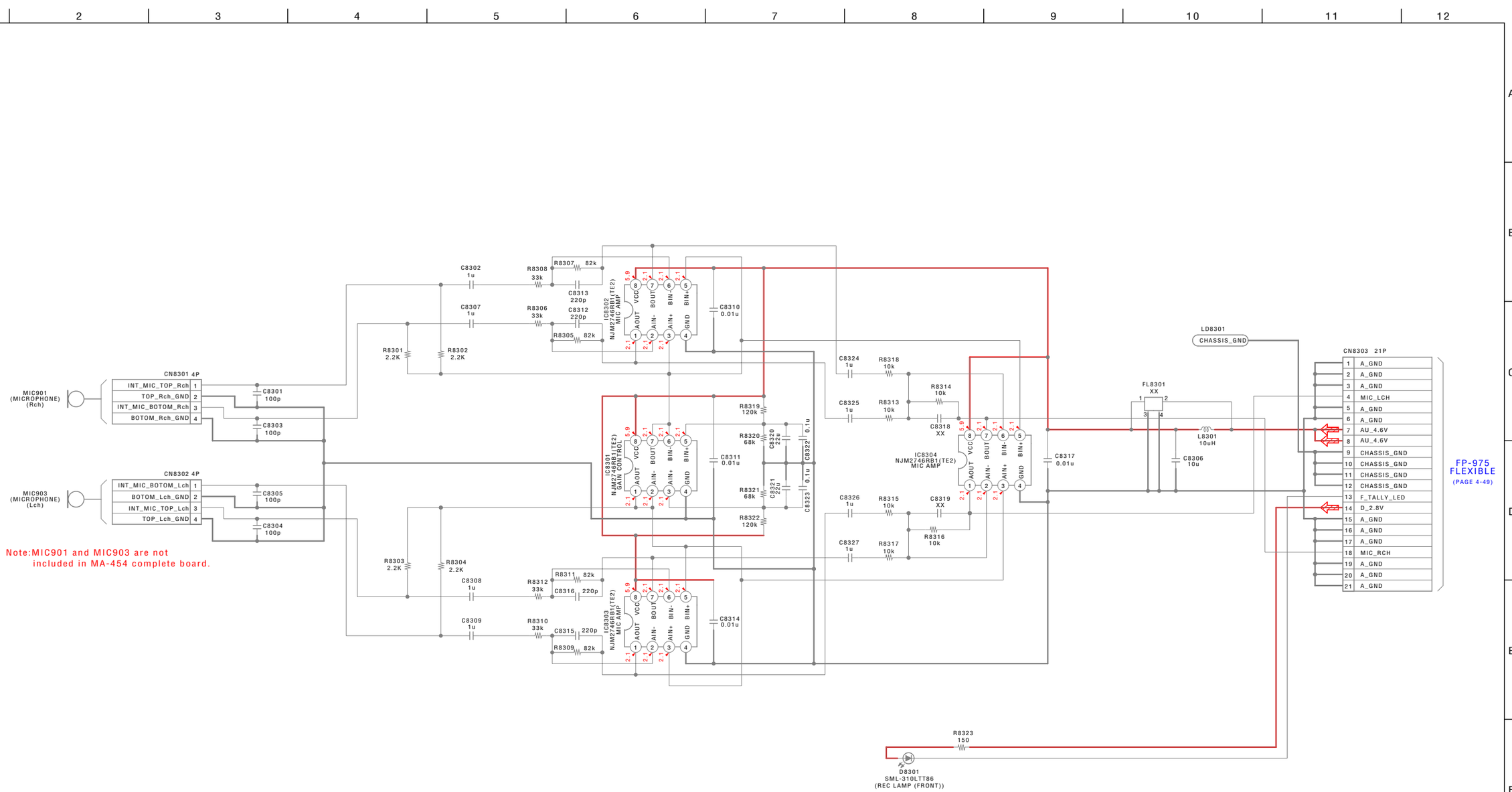


PI-029
(1/2)
CN7007
Through the
Flexible Flat Cable
(FFC-170)
(PAGE 4-31)

CN7201 14P

REG_GND	1	REG_GND
REG_GND	2	
KEY_AD1	3	KEY_AD0
REG_GND	4	
KEY_AD3	5	KEY_AD2
KEY_AD4	6	KEY_AD4
REG_GND	7	
XBATT_INFO_SW	8	XBATT_INFO_SW
REG_GND	9	
XRESET	10	XRESET
REG_GND	11	
PANEL_REVERSE	12	PANEL_REVERSE
PANEL_OPEN	13	PANLE_OPEN
REG_GND	14	

KY-105 BOARD
CONTROL SWITCH

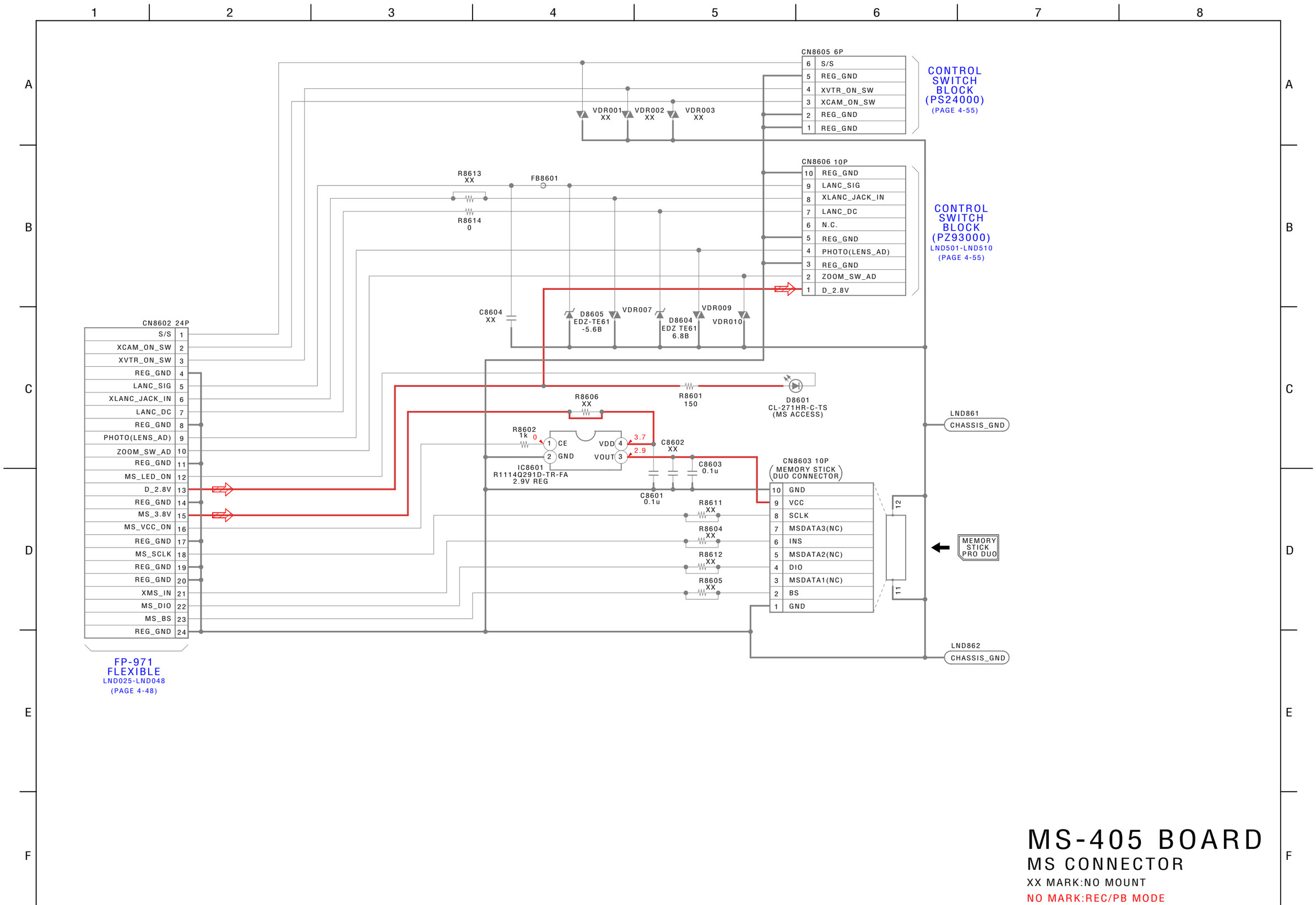


MA-454 BOARD

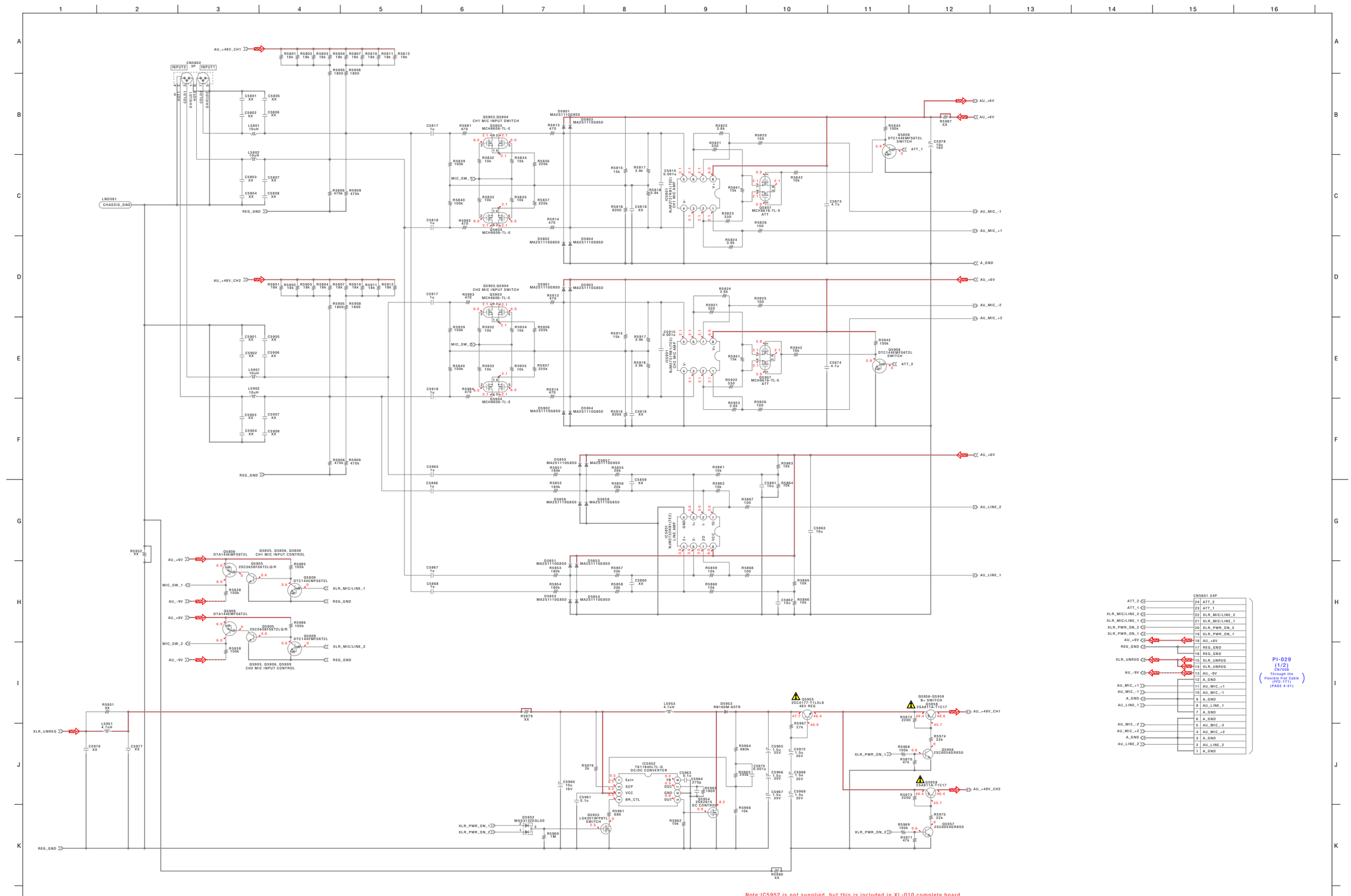
MIC AMP

XX MARK:NO MOUNT

NO MARK:REC/PB MODE


CN8605 6P
6 S/S
5 REG_GND
4 XVTR_ON_SW
3 XCAM_ON_SW
2 REG_GND
1 REG_GND
CONTROL SWITCH BLOCK (PS24000)
(PAGE 4-55)
VDR001 XX
VDR002 XX
VDR003 XX
CN8606 10P
10 REG_GND
9 LANC_SIG
8 XLANC_JACK_IN
7 LANC_DC
6 N.C.
5 REG_GND
4 PHOTO(LENS_AD)
3 REG_GND
2 ZOOM_SW_AD
1 D_2.8V
CONTROL SWITCH BLOCK (PZ93000)
LND501-LND510
(PAGE 4-55)
R8613 XX
FB8601
R8614 0
C8604 XX
D8605 EDZ-TE61 -5.6B
VDR007
D8604 EDZ TE61 6.8B
VDR009
VDR010
CN8602 24P
S/S 1
XCAM_ON_SW 2
XVTR_ON_SW 3
REG_GND 4
LANC_SIG 5
XLANC_JACK_IN 6
LANC_DC 7
REG_GND 8
PHOTO(LENS_AD) 9
ZOOM_SW_AD 10
REG_GND 11
MS_LED_ON 12
D_2.8V 13
REG_GND 14
MS_3.8V 15
MS_VCC_ON 16
REG_GND 17
MS_SCLK 18
REG_GND 19
REG_GND 20
XMS_IN 21
MS_DIO 22
MS_BS 23
REG_GND 24
FP-971 FLEXIBLE
LND025-LND048
(PAGE 4-48)
R8601 150
D8601 CL-271HR-C-TS (MS ACCESS)
R8606 XX
LND861
CHASSIS_GND
R8602 1k 0
1 CE
2 GND
VDD 4
VOUT 3
3.7
2.9
IC8601 R1114Q291D-TR-FA 2.9V REG
C8602 XX
C8603 0.1u
C8601 0.1u
CN8603 10P
(MEMORY STICK DUO CONNECTOR)
10 GND
9 VCC
8 SCLK
7 MSDATA3(NC)
6 INS
5 MSDATA2(NC)
4 DIO
3 MSDATA1(NC)
2 BS
1 GND
12
11
R8611 XX
R8604 XX
R8612 XX
R8605 XX
MEMORY STICK PRO DUO
LND862
CHASSIS_GND
MS-405 BOARD
MS CONNECTOR
XX MARK:NO MOUNT
NO MARK:REC/PB MODE

• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.



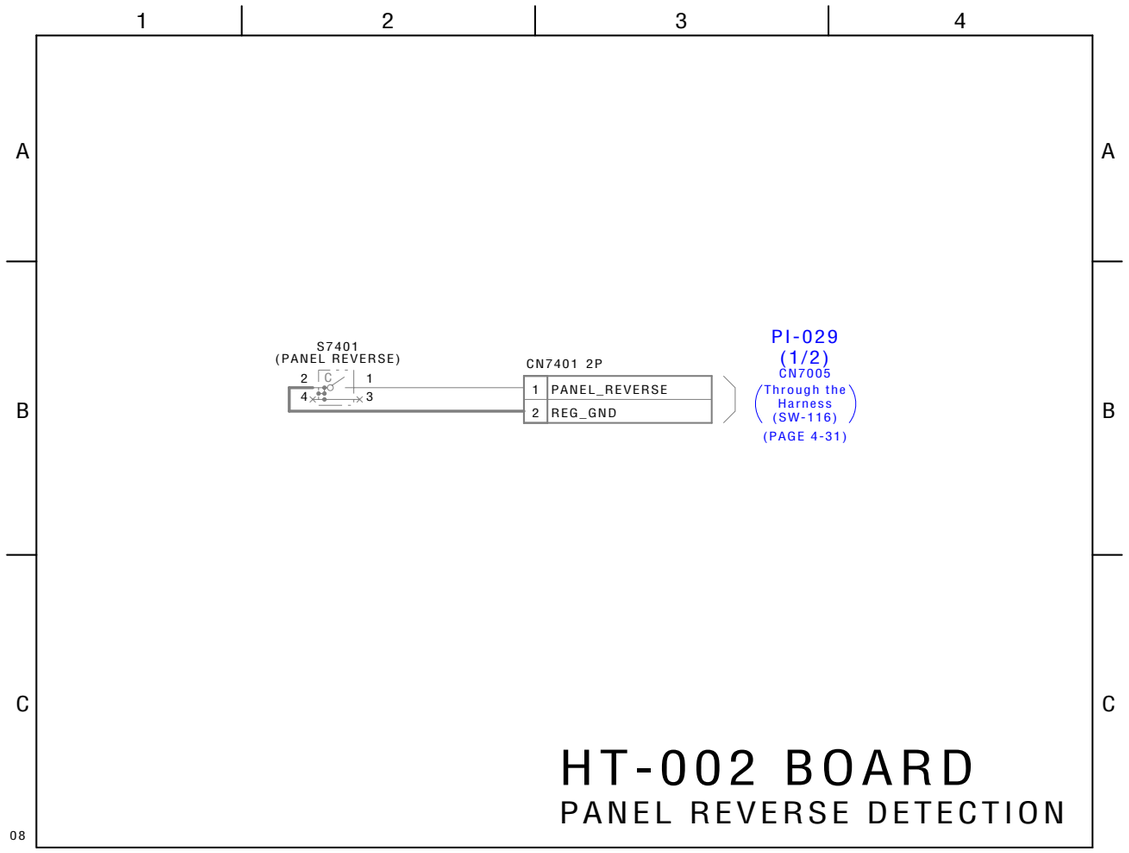
Note:IC5952 is not supplied, but this is included in XL-010 complete board.

XL-010 BOARD

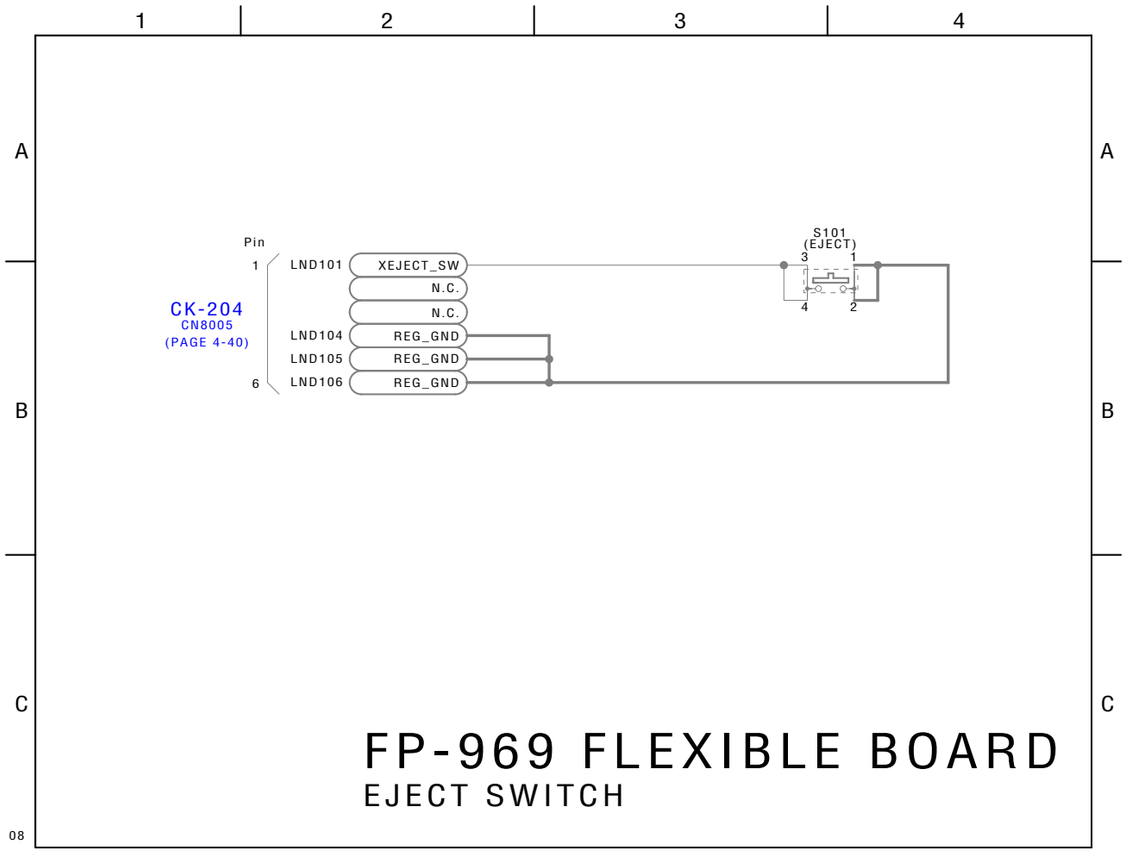
XLR INPUT

XX MARK:NO MOUNT

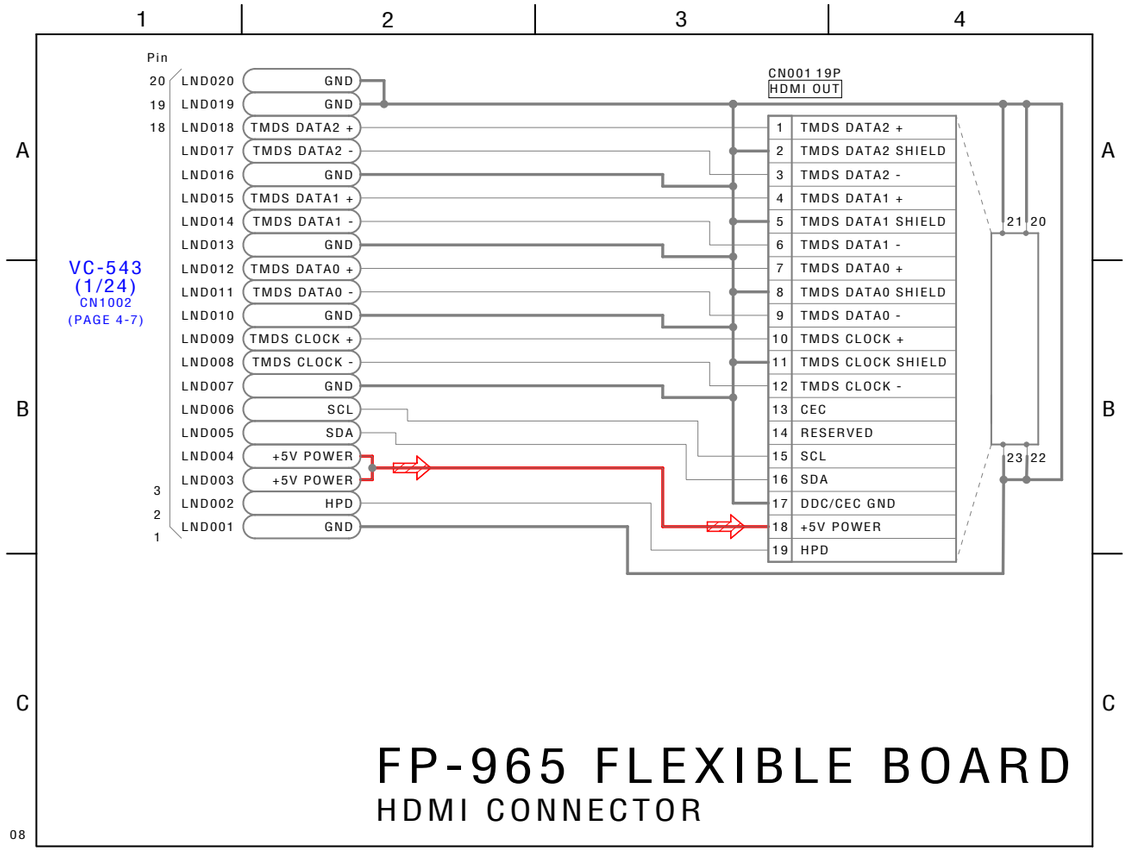
NO MARK:REC/PB MODE



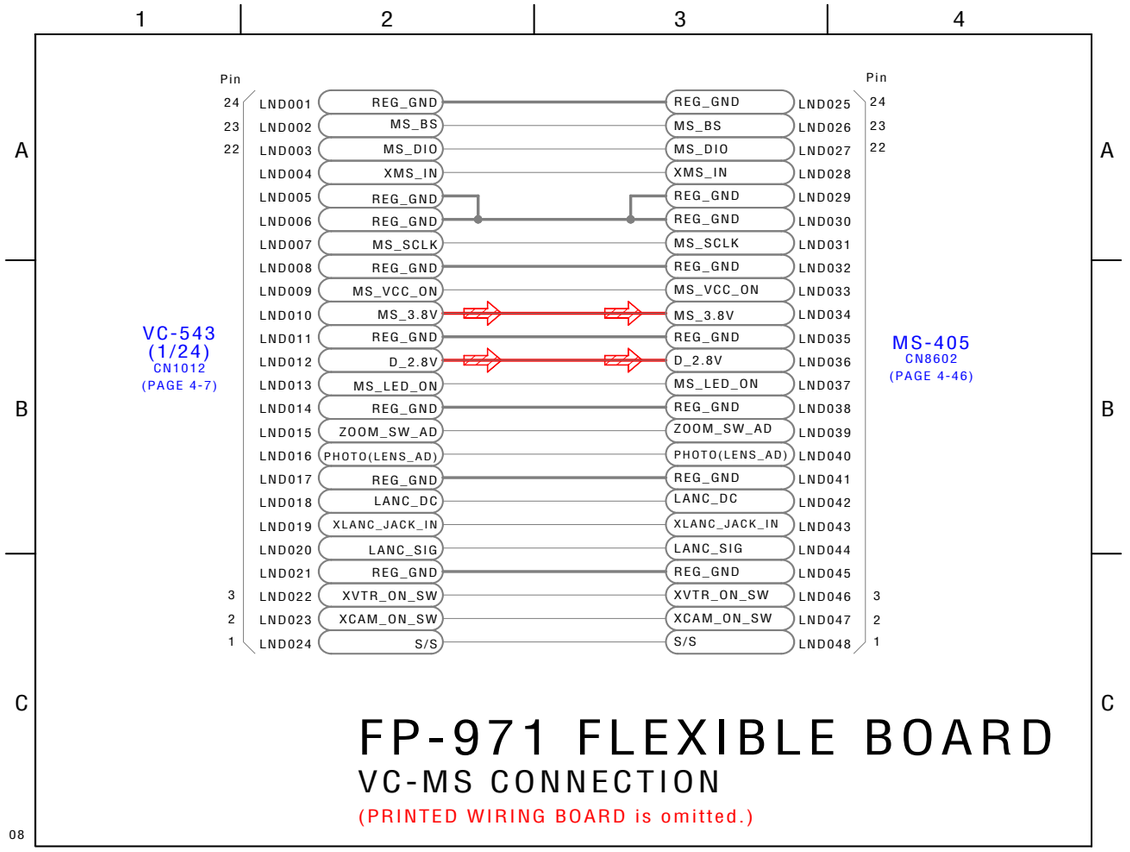
HT-002 BOARD
PANEL REVERSE DETECTION



FP-969 FLEXIBLE BOARD
EJECT SWITCH

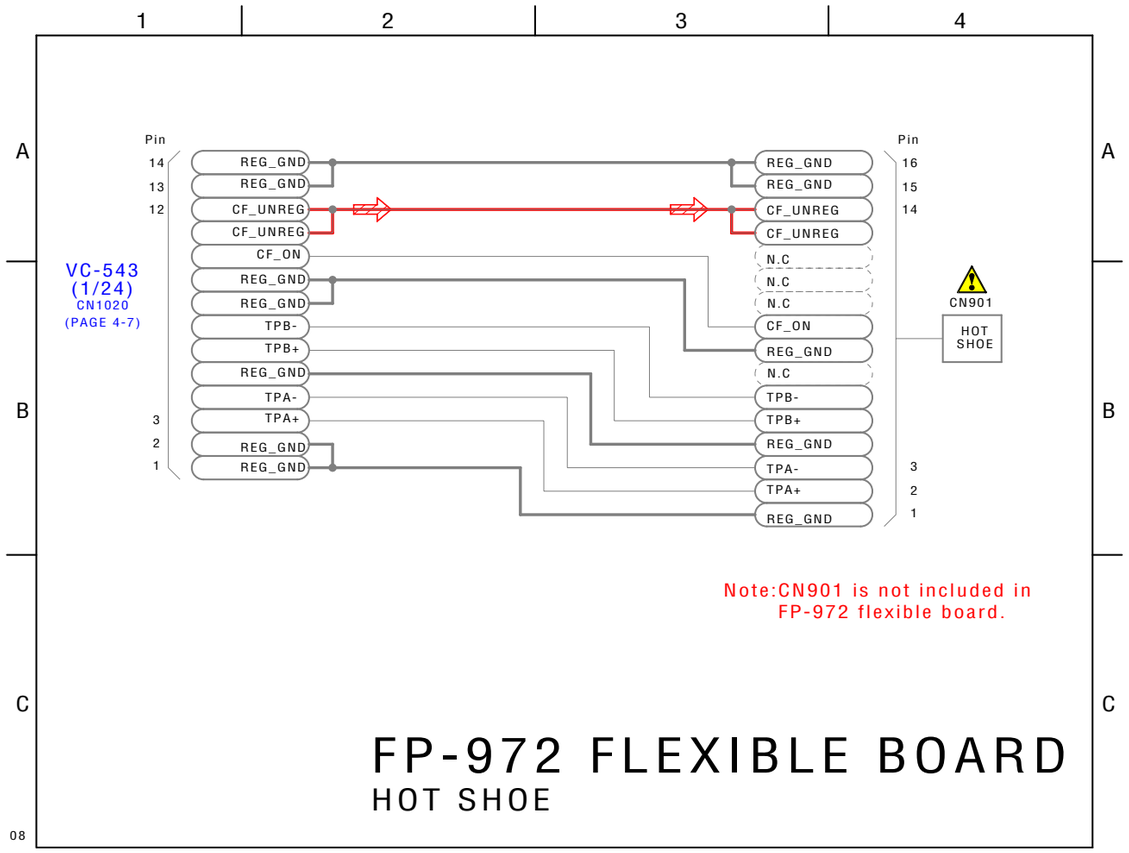


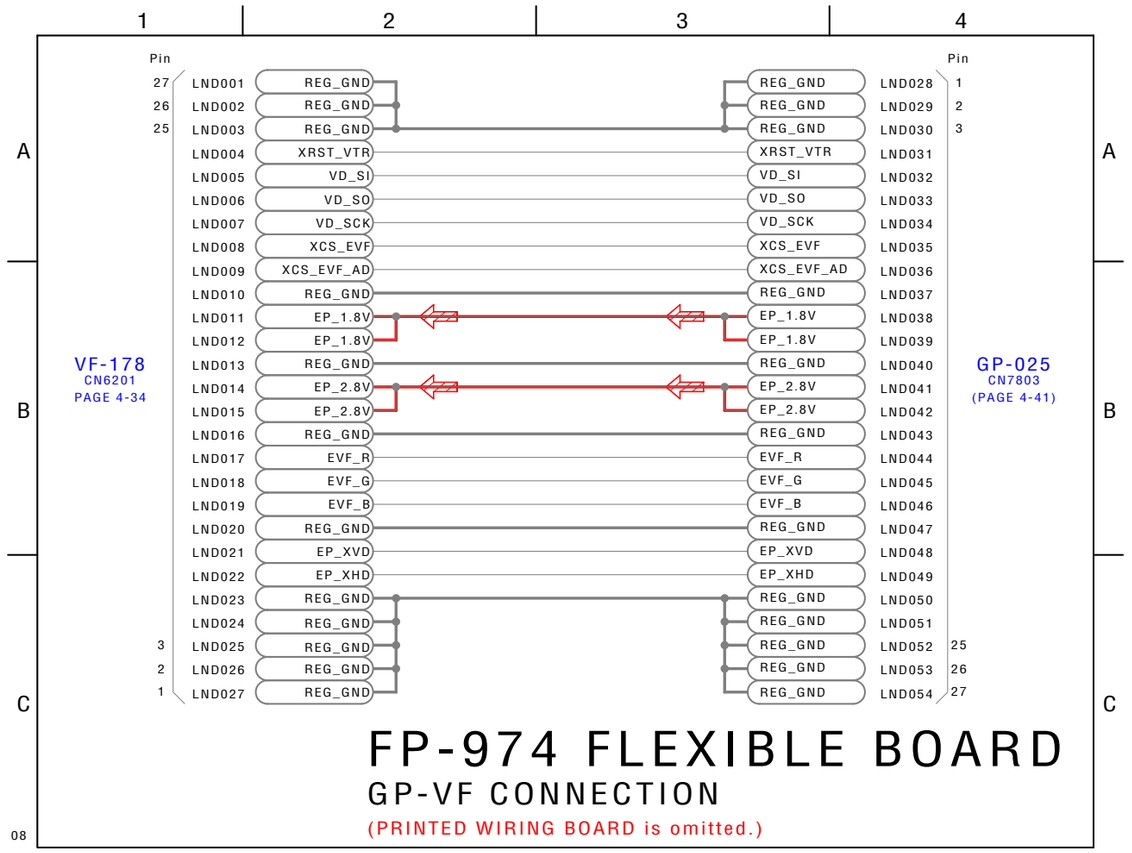
FP-965 FLEXIBLE BOARD
HDMI CONNECTOR

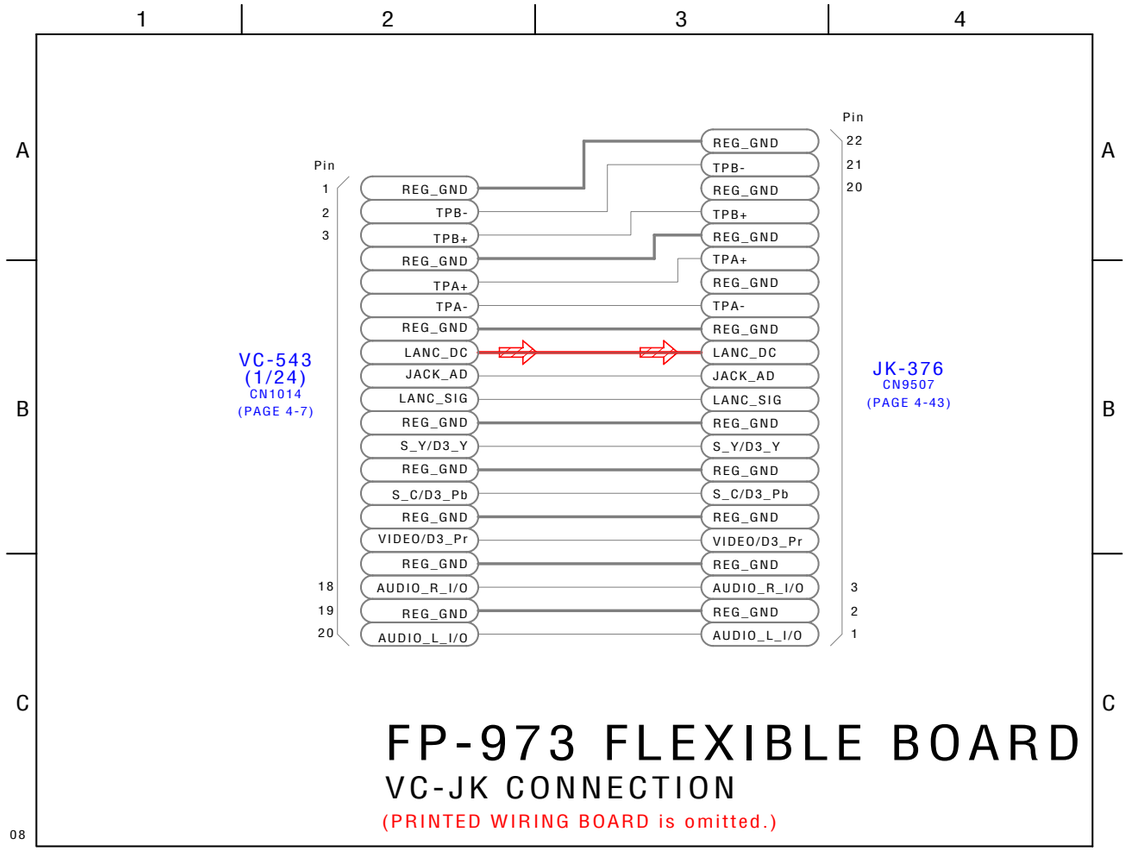


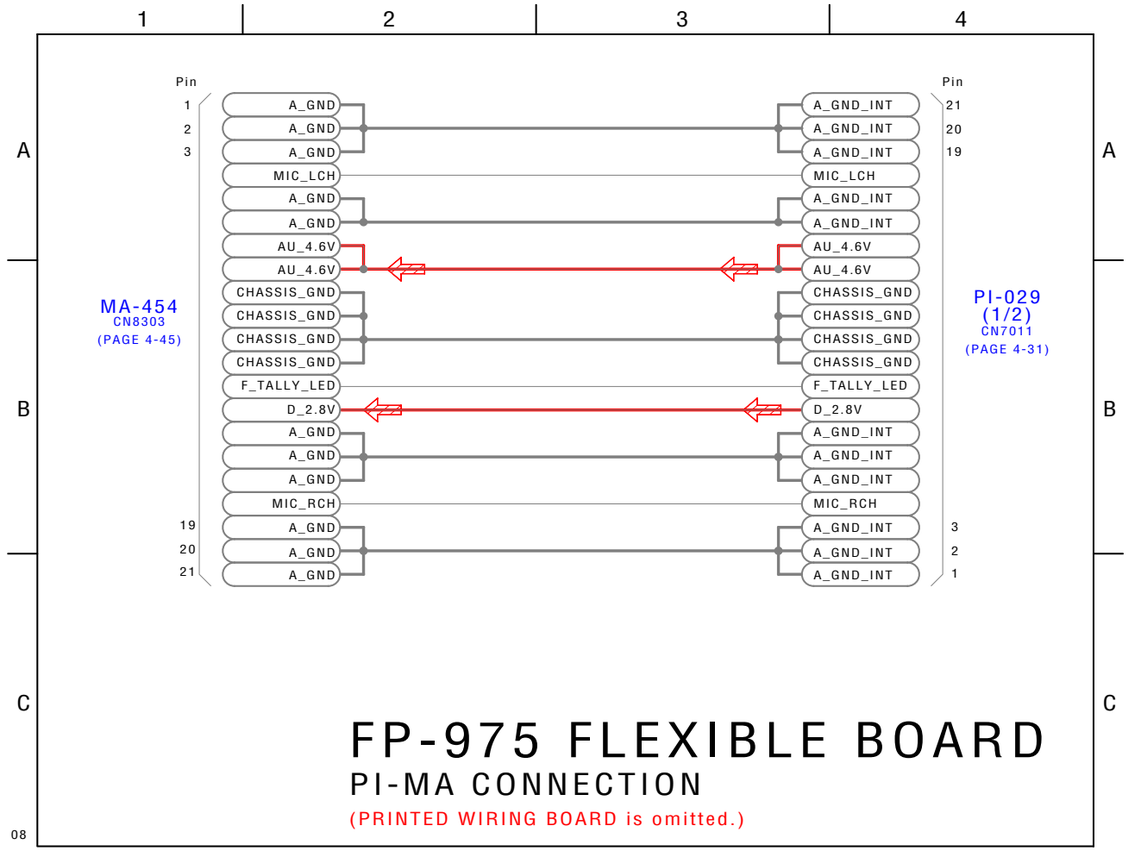
FP-971 FLEXIBLE BOARD
VC-MS CONNECTION
(PRINTED WIRING BOARD is omitted.)

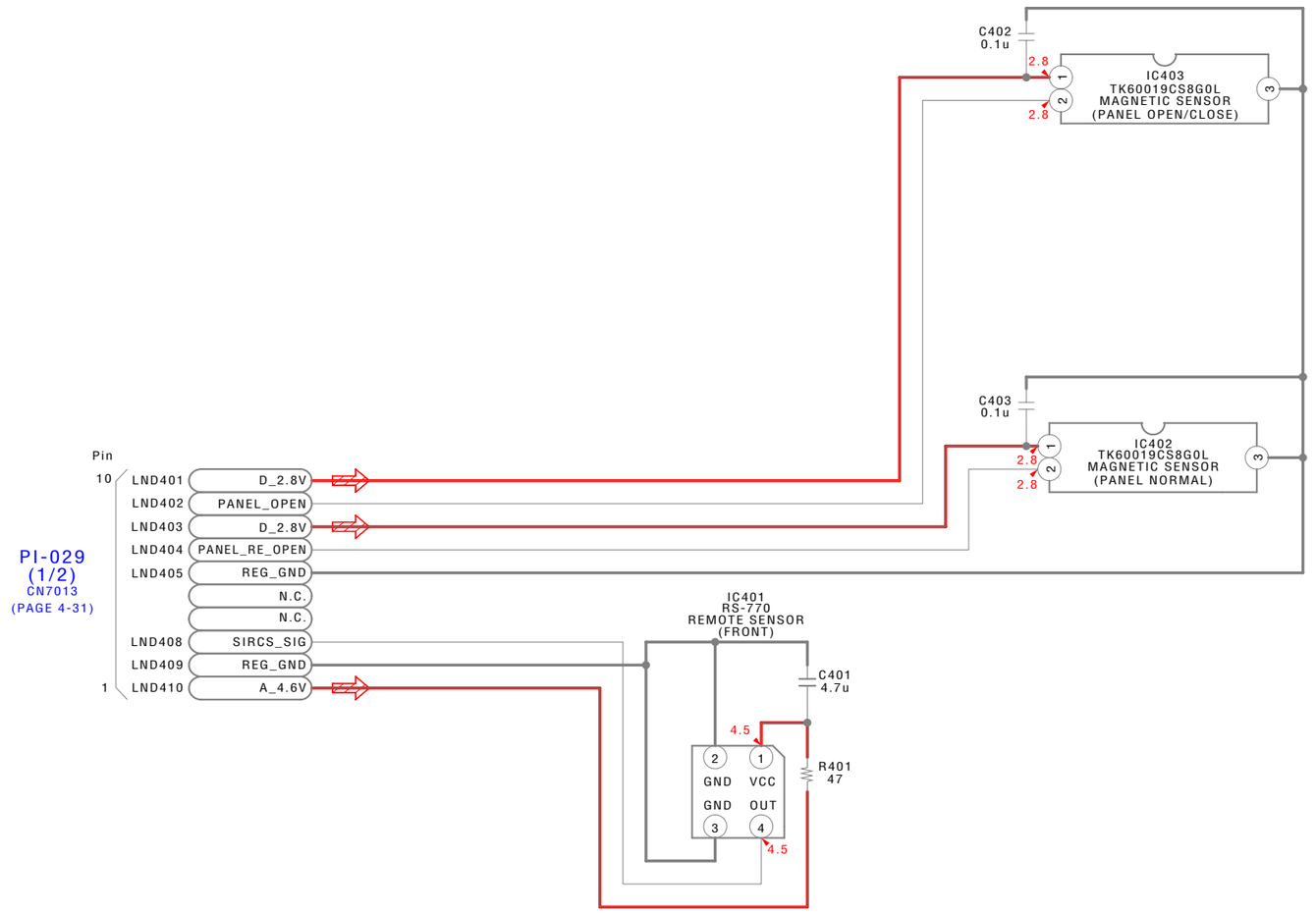
• Refer to page 4-3 (English), 4-4 (Japanese) for mark ⚠.







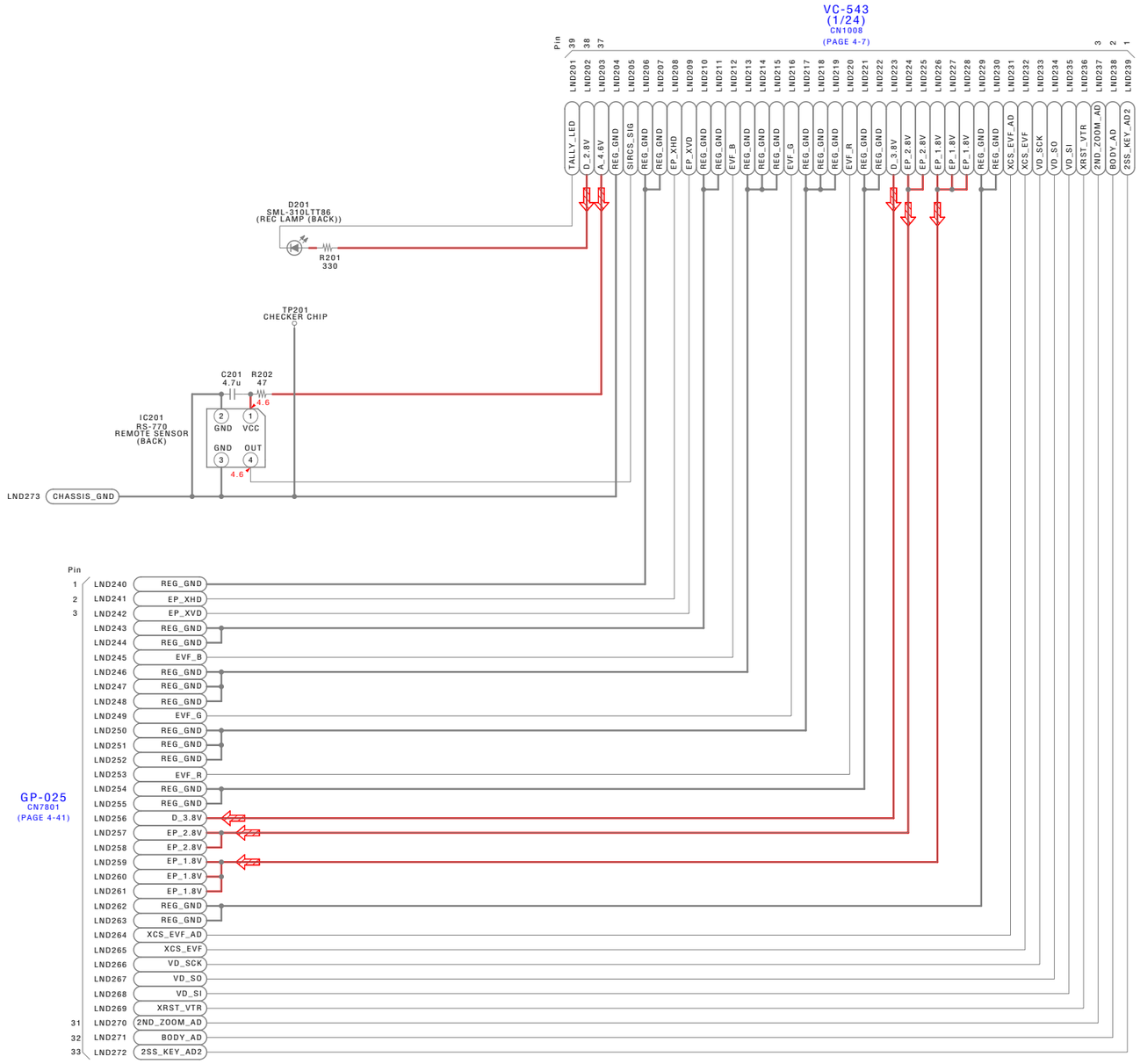




FP-966 FLEXIBLE BOARD

REMOTE SENSOR(FRONT), PANEL DETECT

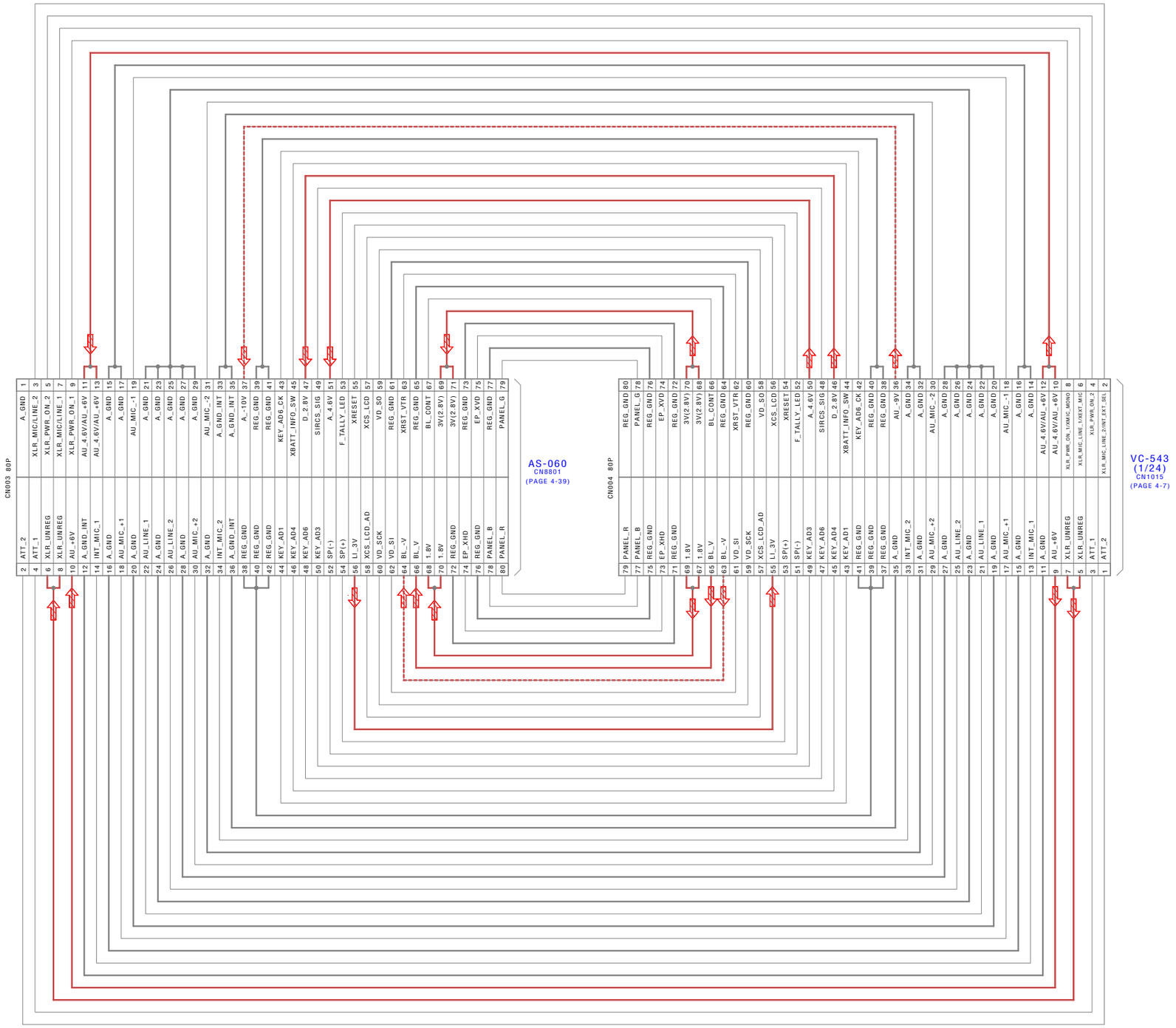
NO MARK:REC/PB MODE



FP-967 FLEXIBLE BOARD

VC-GP CONNECTION, REMOTE SENSOR(BACK)

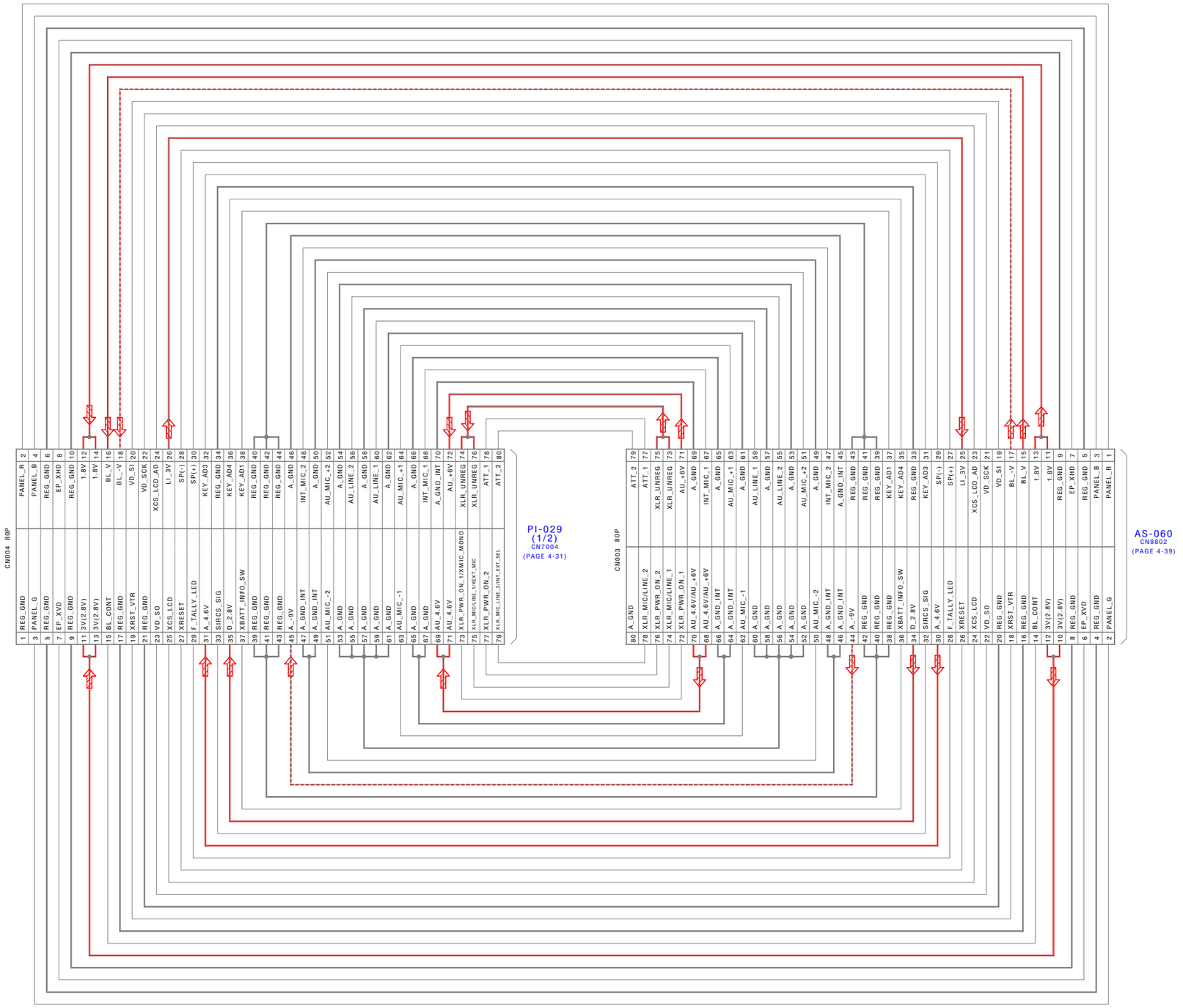
NO MARK:REC/PB MODE



FP-981 FLEXIBLE BOARD

VC-AS CONNECTION

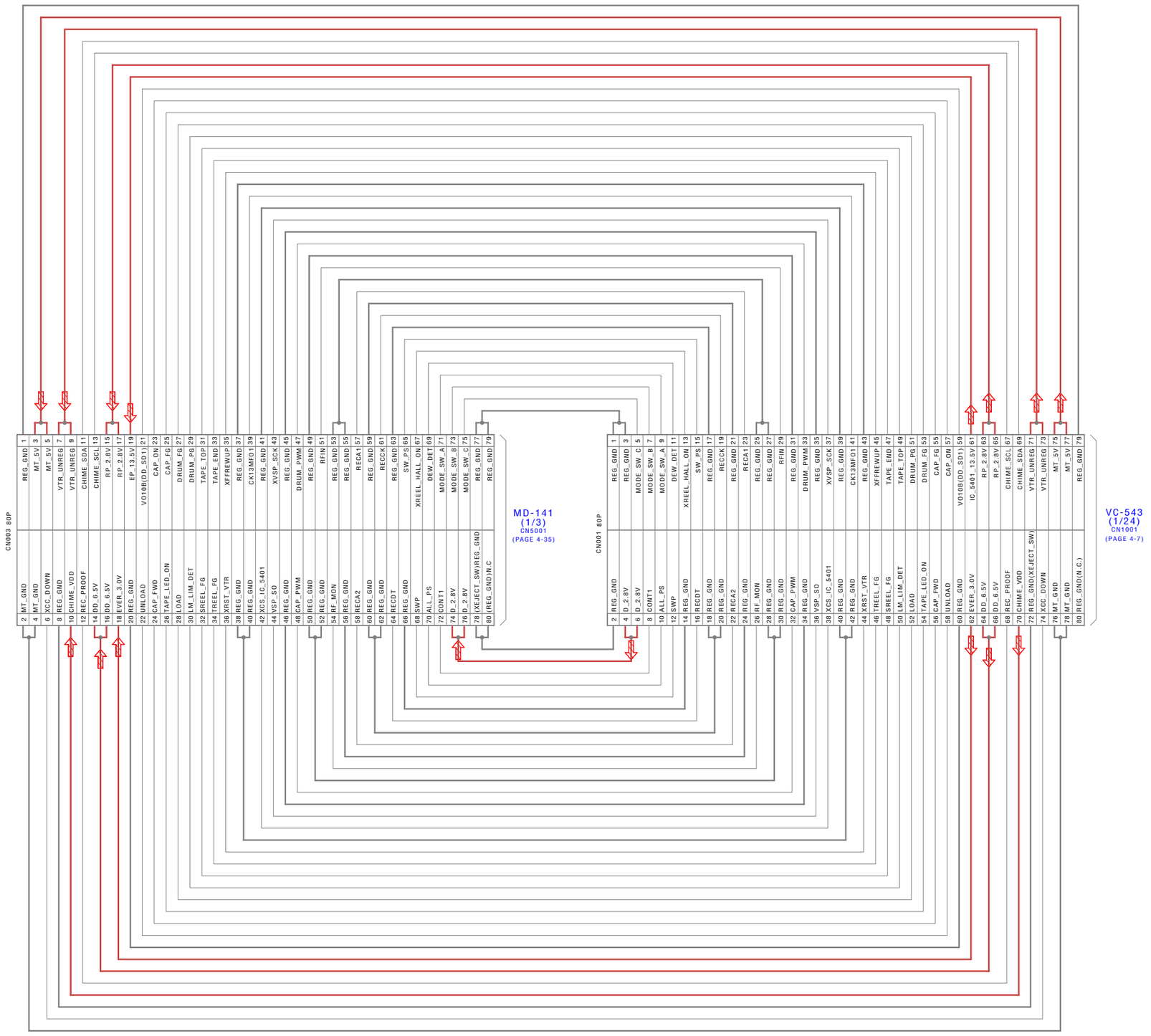
(PRINTED WIRING BOARD is omitted.)



FP-982 FLEXIBLE BOARD

AS-PI CONNECTION

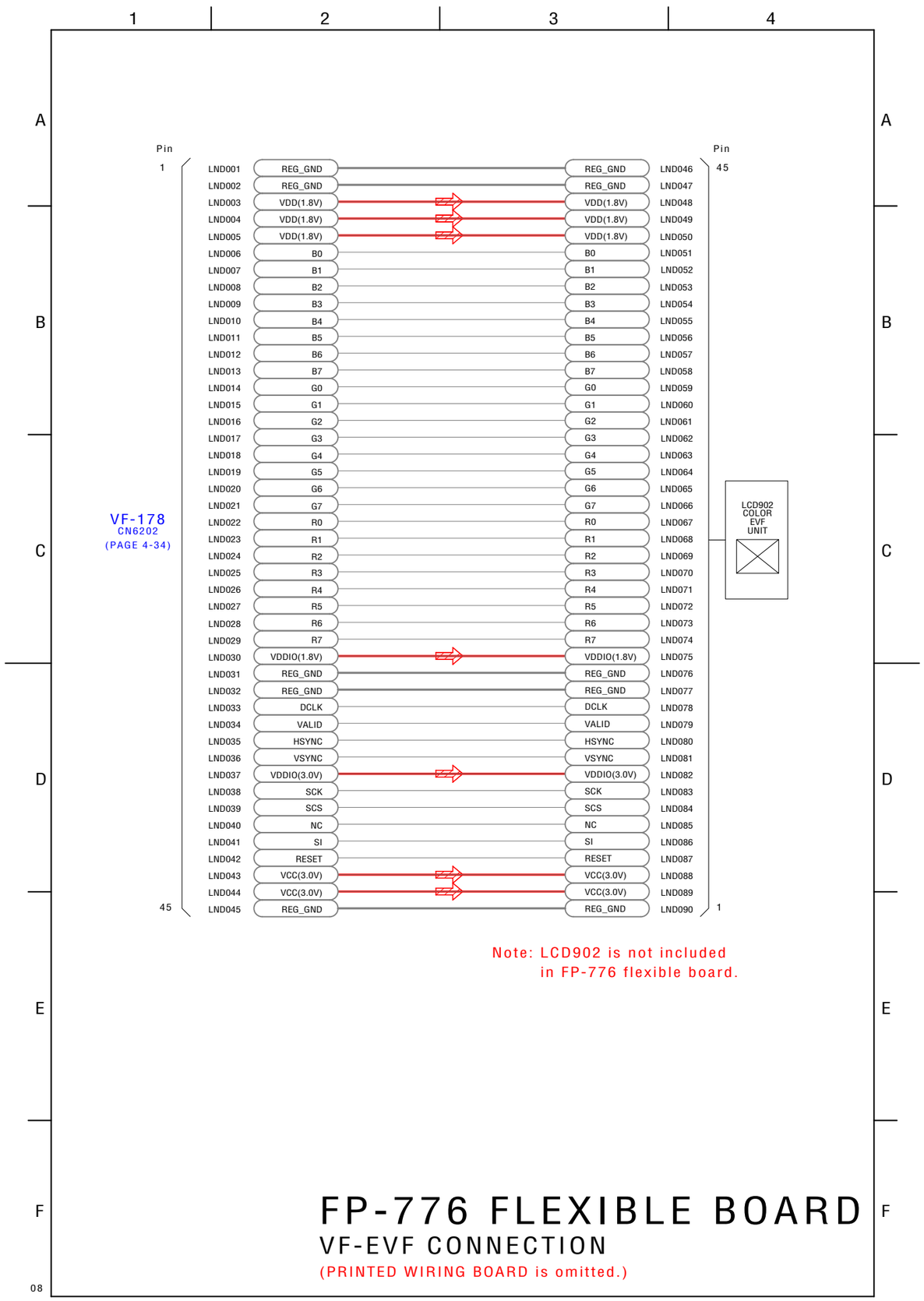
(PRINTED WIRING BOARD is omitted.)



FP-983 FLEXIBLE BOARD

VC-MD CONECTION

(PRINTED WIRING BOARD is omitted.)

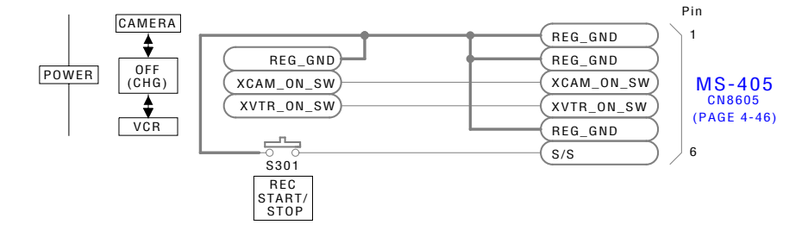


Note: LCD902 is not included
in FP-776 flexible board.

FP-776 FLEXIBLE BOARD

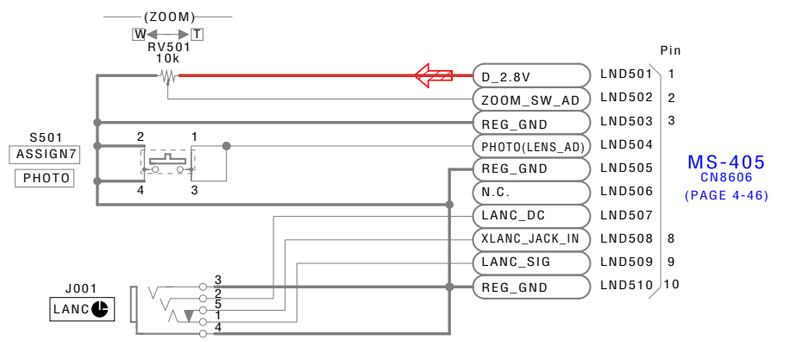
VF-EVF CONNECTION

(PRINTED WIRING BOARD is omitted.)



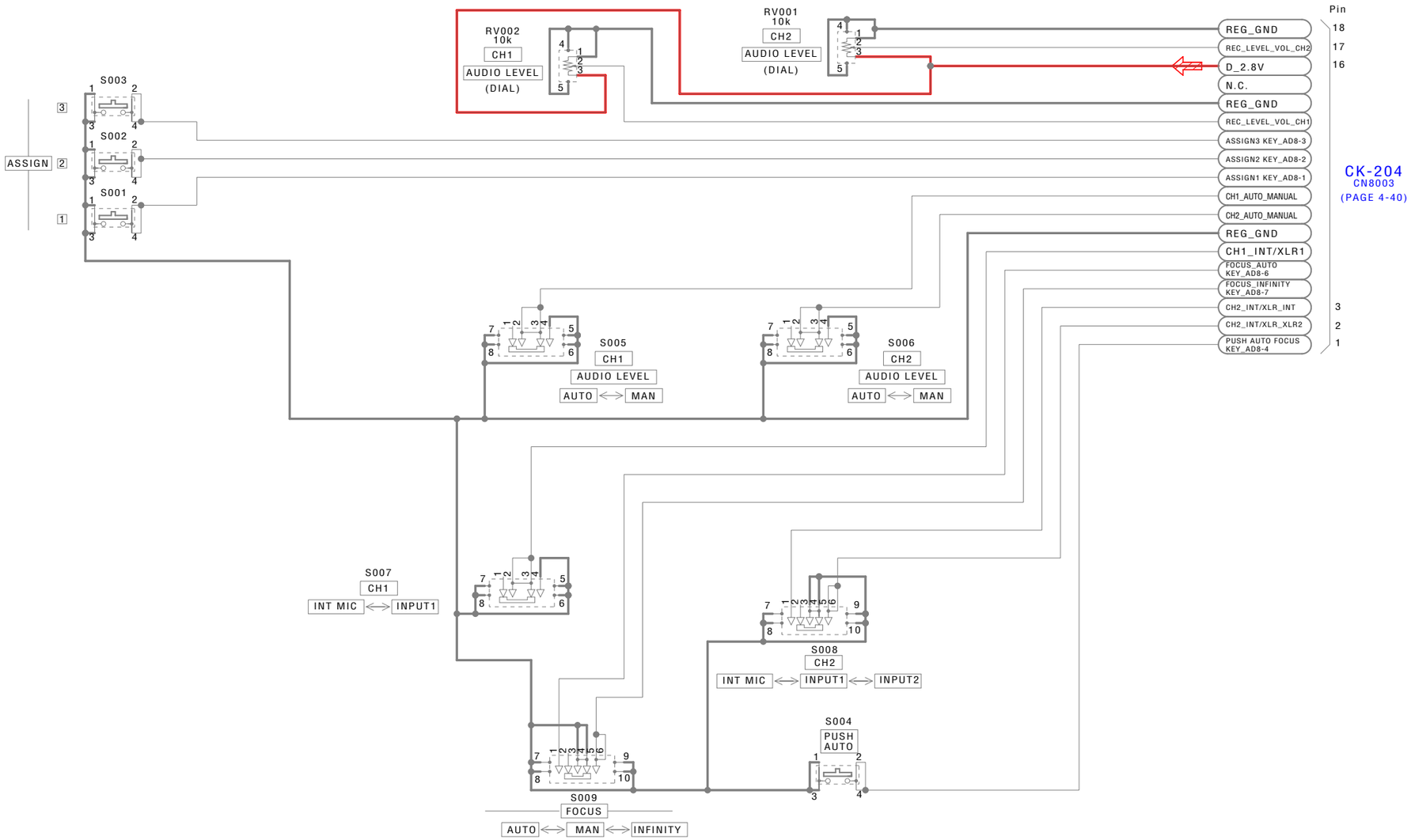
CONTROL SWITCH BLOCK (PS24000)

(CONTROL SWITCH BLOCK(PS24000)is replaced as block,
so that PRINTED WIRING BOARD is omitted.)



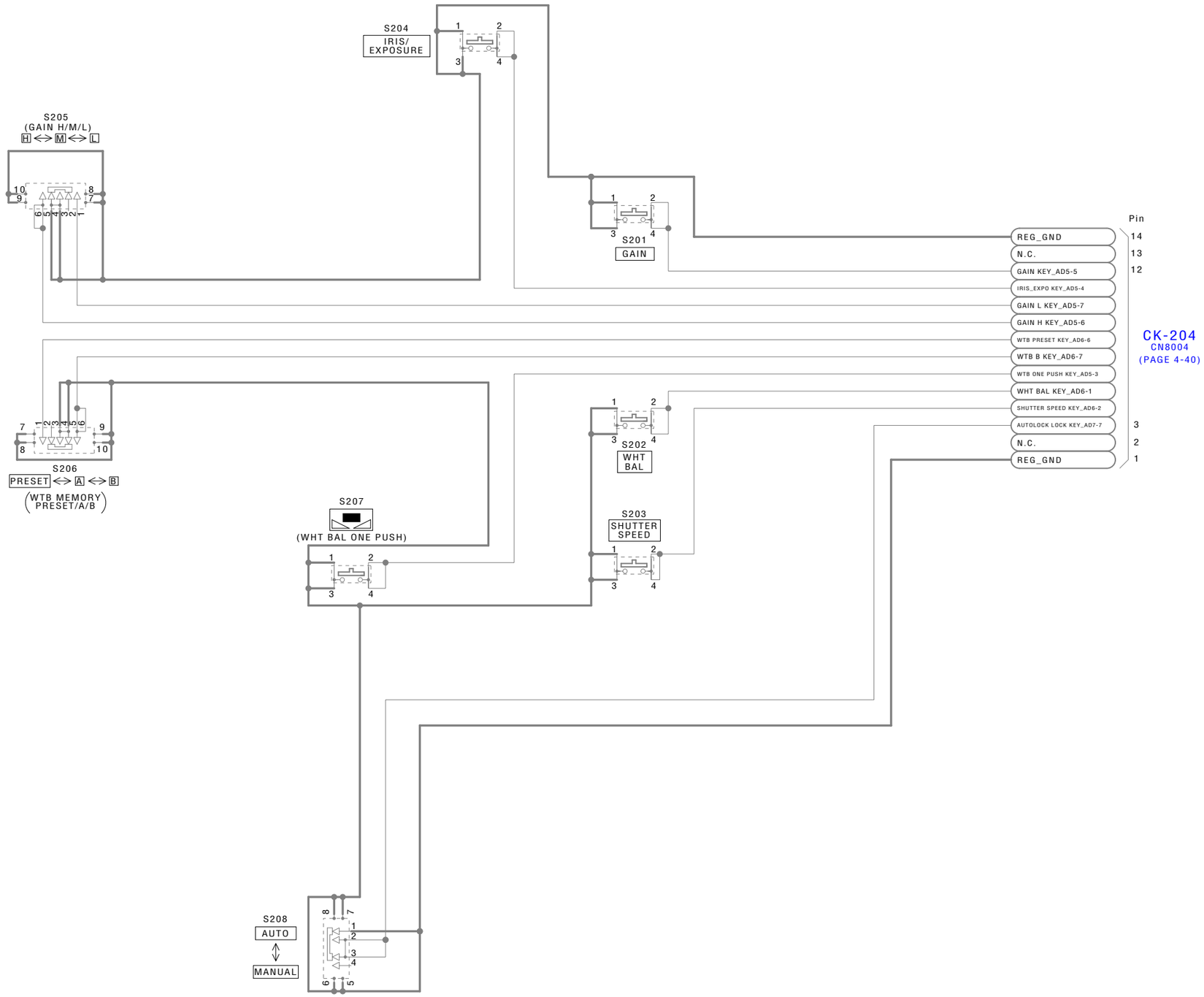
CONTROL SWITCH BLOCK (PZ93000)

(CONTROL SWITCH BLOCK(PZ93000)is replaced as block,
so that PRINTED WIRING BOARD is omitted.)



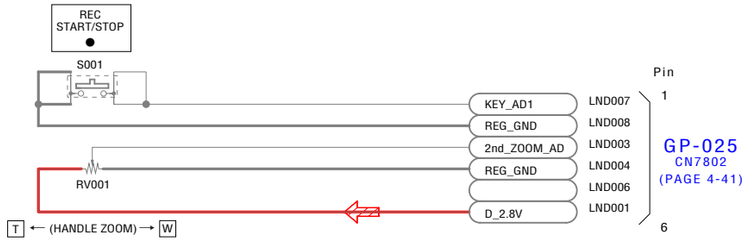
CONTROL SWITCH BLOCK (AU93000)

(CONTROL SWITCH BLOCK(AU93000)is replaced as block, so that PRINTED WIRING BOARD is omitted.)



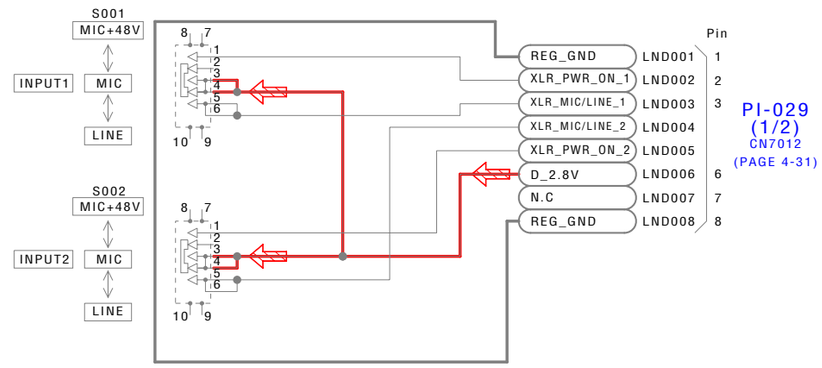
CONTROL SWITCH BLOCK (CF24000)

(CONTROL SWITCH BLOCK(CF24000)is replaced as block, so that PRINTED WIRING BOARD is omitted.)



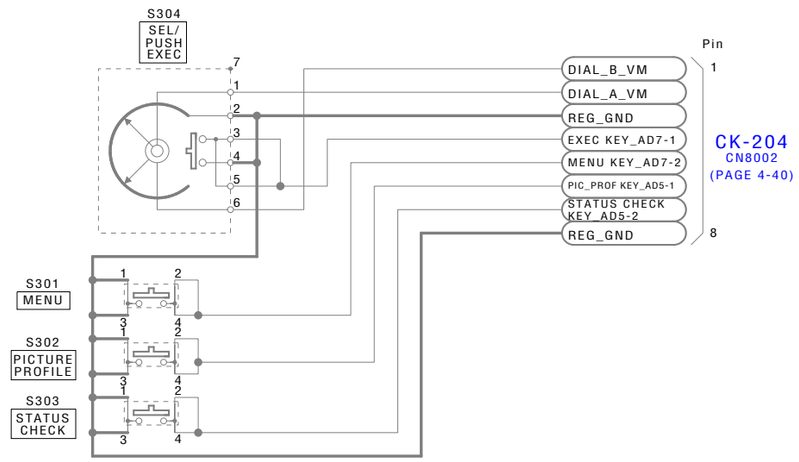
CONTROL SWITCH BLOCK (GZ92000)

(CONTROL SWITCH BLOCK(GZ92000)is replaced as block, so that PRINTED WIRING BOARD is omitted.)



CONTROL SWITCH BLOCK (XS93000)

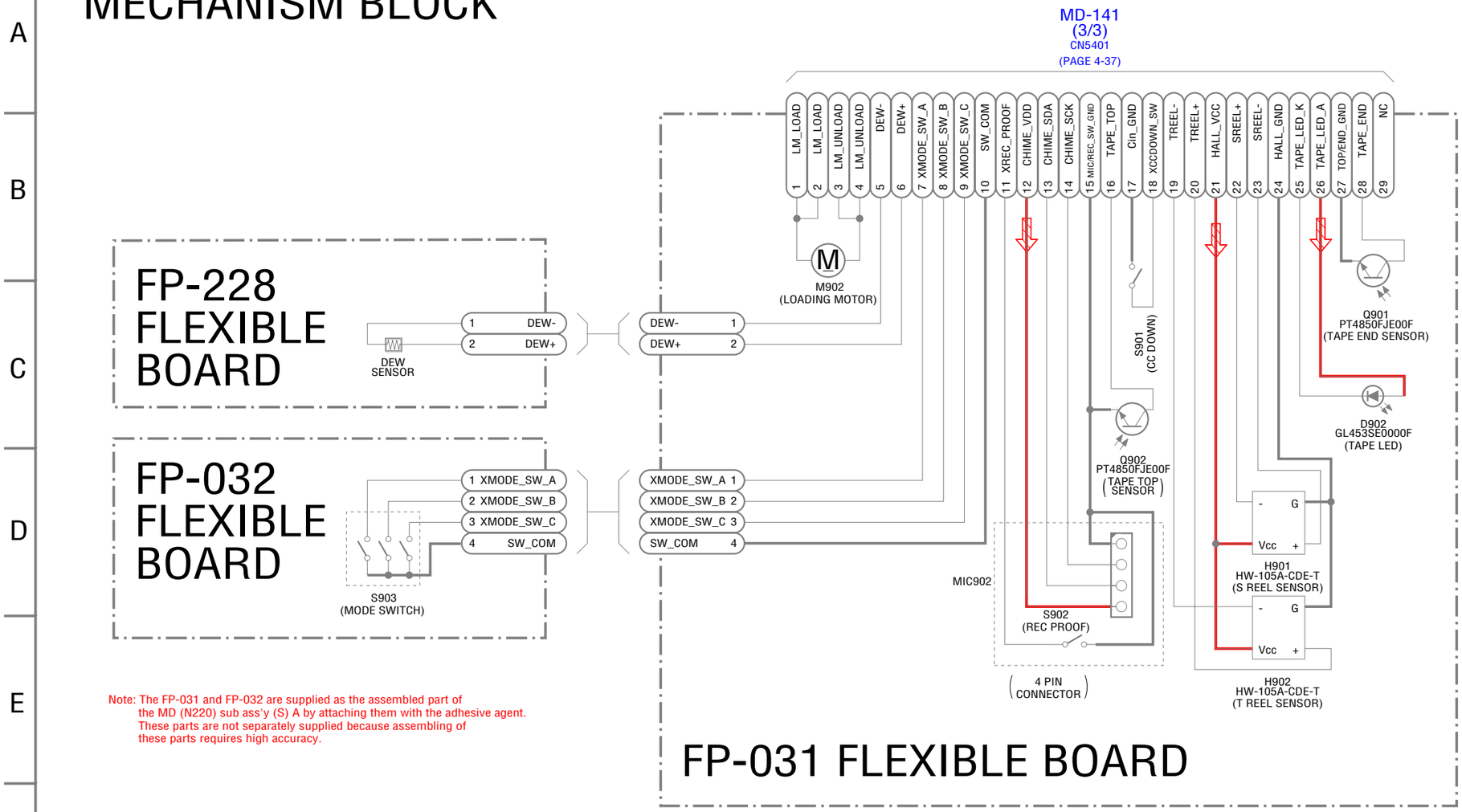
(CONTROL SWITCH BLOCK(XS93000)is replaced as block, so that PRINTED WIRING BOARD is omitted.)



CONTROL SWITCH BLOCK (KP24000)

(CONTROL SWITCH BLOCK(KP24000)is replaced as block, so that PRINTED WIRING BOARD is omitted.)

MECHANISM BLOCK



Note: The FP-031 and FP-032 are supplied as the assembled part of the MD (N220) sub ass'y (S) A by attaching them with the adhesive agent. These parts are not separately supplied because assembling of these parts requires high accuracy.

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4-3. PRINTED WIRING BOARDS

Link

- CM-097 BOARD
- CM-104 BOARD
- VC-543 BOARD (SIDE A)
- VC-543 BOARD (SIDE B)
- PI-029 BOARD
- PD-372 BOARD
- VF-178 BOARD
- MD-141 BOARD
- GY-014 BOARD
- AS-060 BOARD
- CK-204 BOARD
- GP-025 BOARD
- HP-153 BOARD
- JK-376 BOARD
- KY-105 BOARD
- MA-454 BOARD
- MS-405 BOARD
- XL-010 BOARD
- HT-002 BOARD
- FP-965 FLEXIBLE BOARD
- FP-966 FLEXIBLE BOARD
- FP-967 FLEXIBLE BOARD
- FP-969 FLEXIBLE BOARD
- FP-972 FLEXIBLE BOARD
- FP-031, FP-032, FP-228 FLEXIBLE BOARD
- COMMON NOTE FOR PRINTED WIRING BOARDS

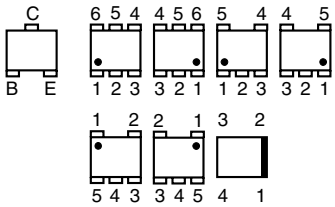
4-3. PRINTED WIRING BOARDS

(ENGLISH)

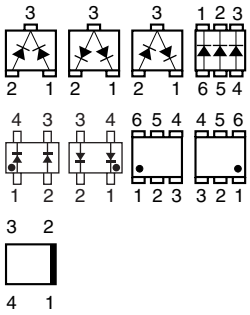
THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS

- : Uses unleaded solder.
- : Circuit board
  : Flexible board
  Pattern from the side which enables seeing.
  : pattern of the rear side
  (The other layers' patterns are not indicated)
- Through hole is omitted.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation
- Chip parts.

Transistor



Diode



(JAPANESE)

プリント図共通ノート

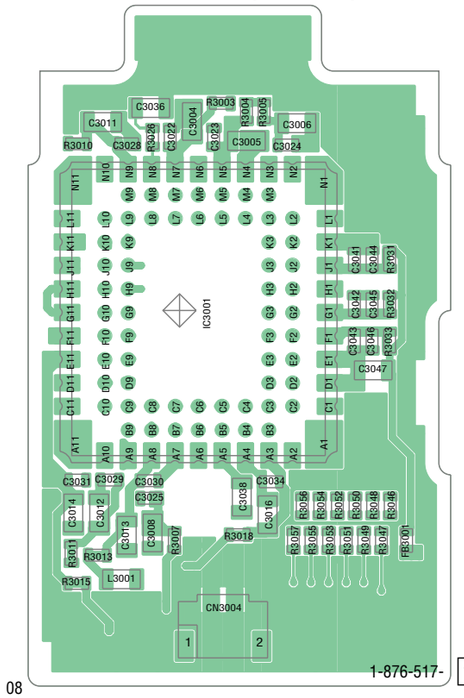
【プリント図ノート】

- **：無鉛半田を使用しています。**
- **：基板**
  ：フレキシブル配線板
  見ている面側のパターン。
  ：裏側のパターン
  （他のパターンについては表示されていません）
- **スルーホールは省略。**
- **プリント図には，本機で使用していない部品が記載されている場合があります。**
- **はパネル表示名称。**

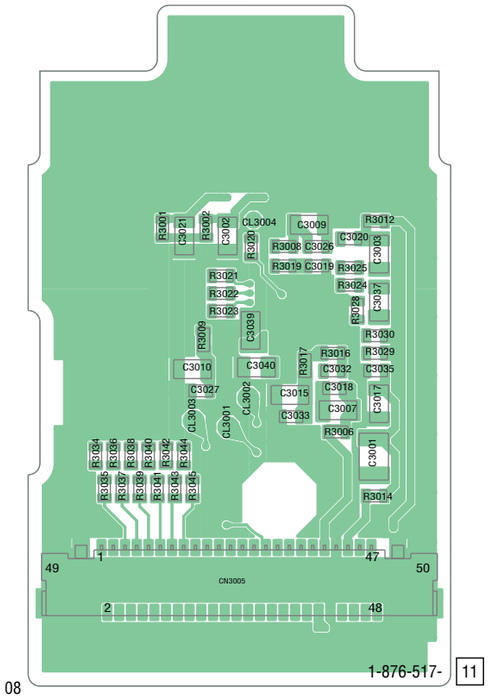
CM-097 (6 layers), CM-104 (6 layers)

: Uses unleaded solder.

CM-097 BOARD (SIDE A)



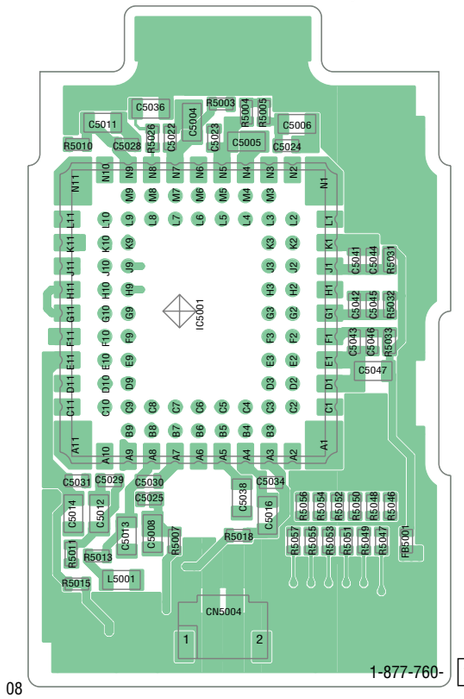
CM-097 BOARD (SIDE B)



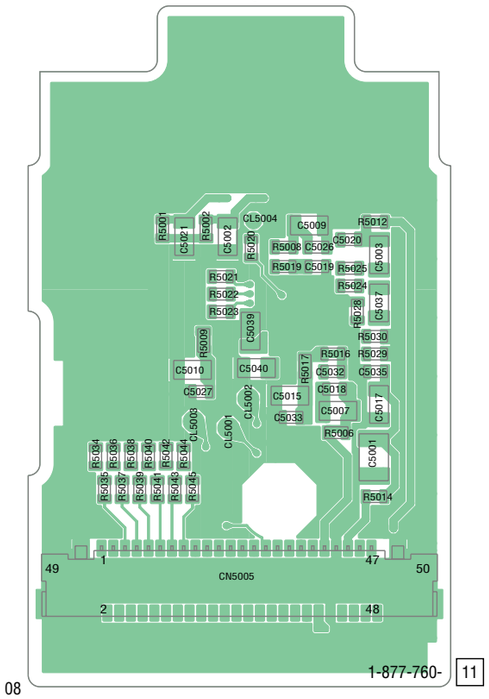
Note: In red and blue, the same CM-097 board is used respective.

Note: CM-097 complete board and all mounted parts (including IC3001(CMOS IMAGER)) are not supplied, but they are included in PRISM DEVICE(service).

CM-104 BOARD (SIDE A)



CM-104 BOARD (SIDE B)



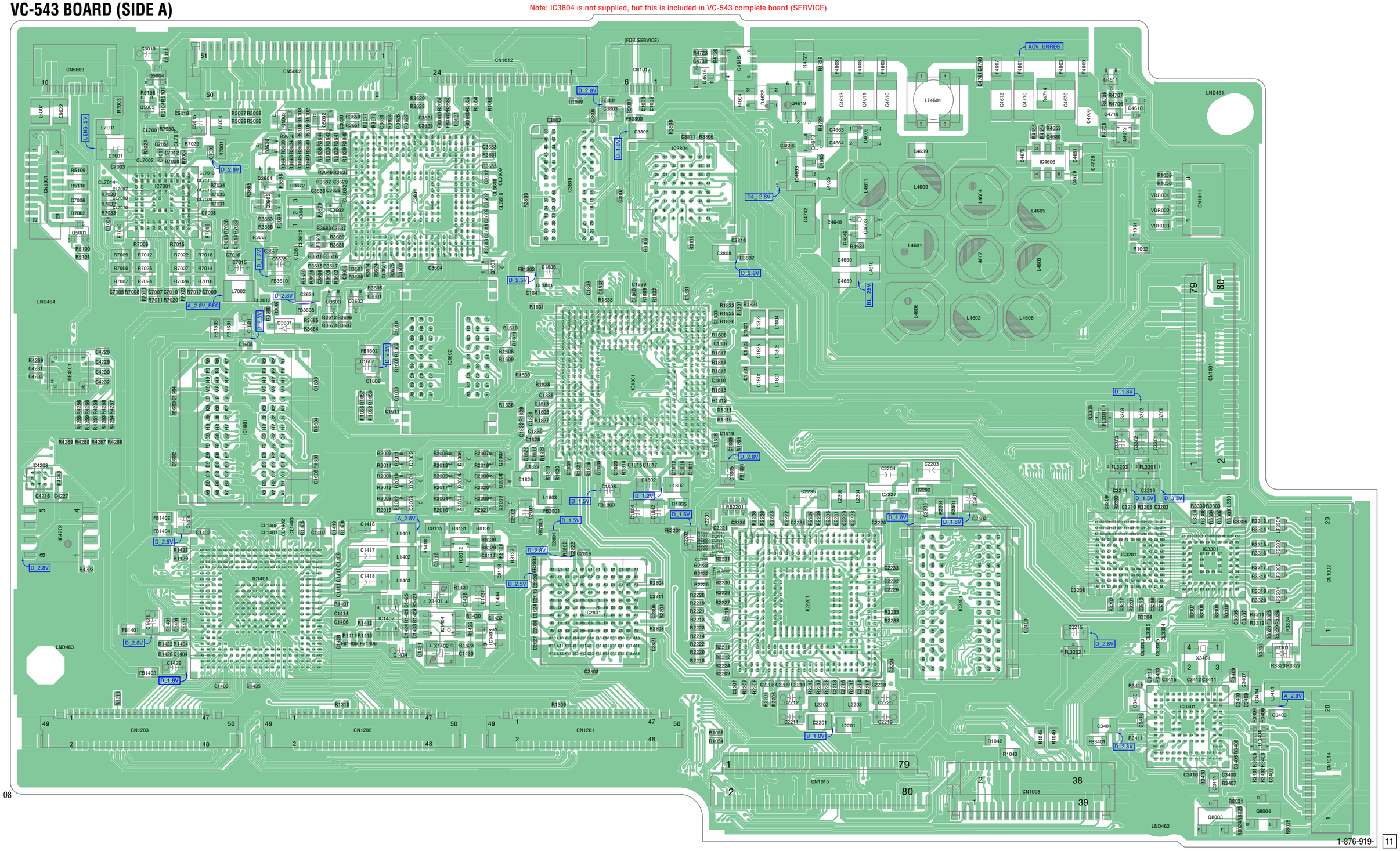
Note: CM-104 complete board and all mounted parts(including IC5001(CMOS IMAGER)) are not supplied, but they are included in PRISM DEVICE(service).

VC-543 (10 layers)

: Uses unleaded solder.

VC-543 BOARD (SIDE A)

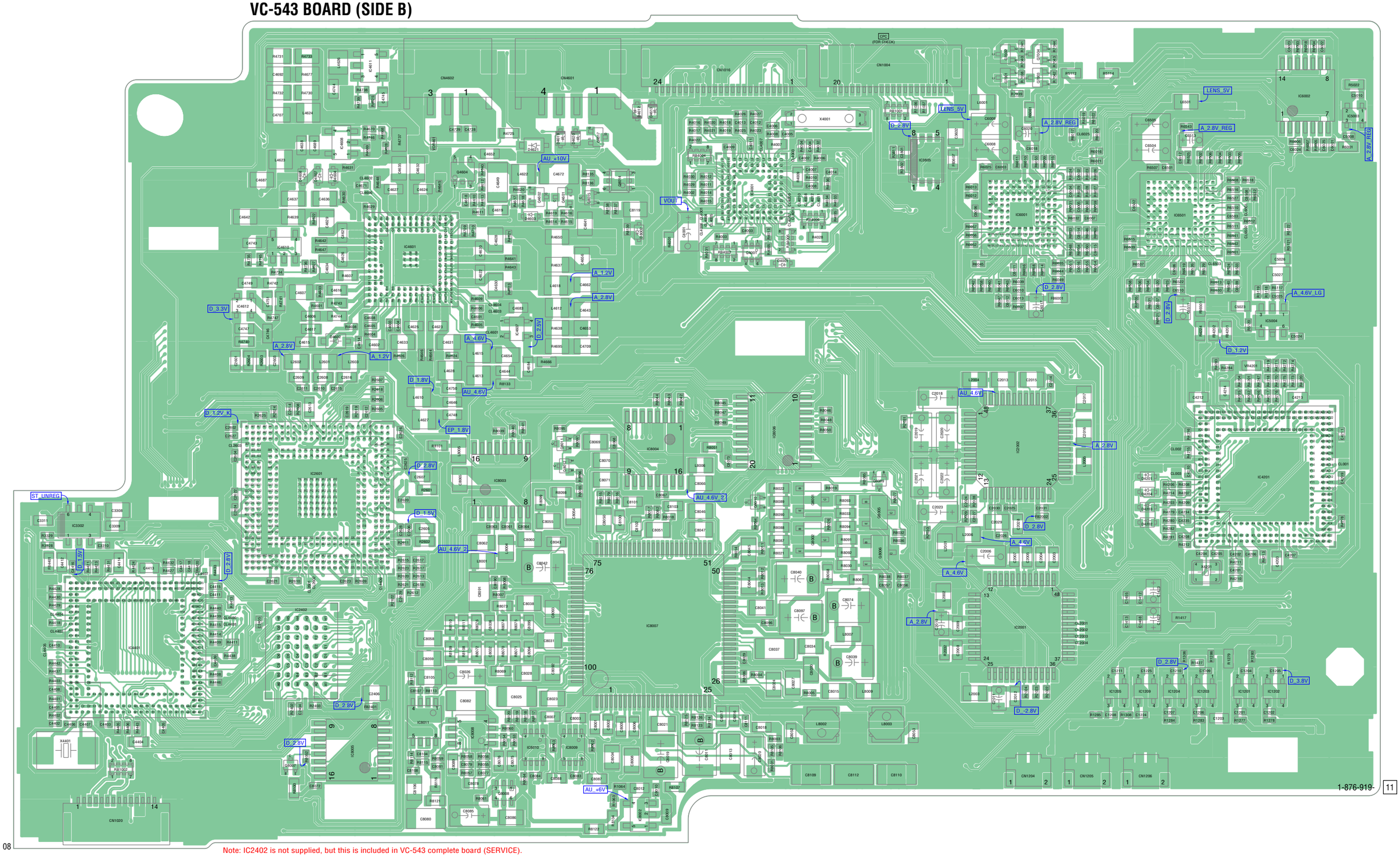
Note: IC3804 is not supplied, but this is included in VC-543 complete board (SERVICE).



VC-543 (10 layers)

: Uses unleaded solder.

VC-543 BOARD (SIDE B)



1-876-919-11

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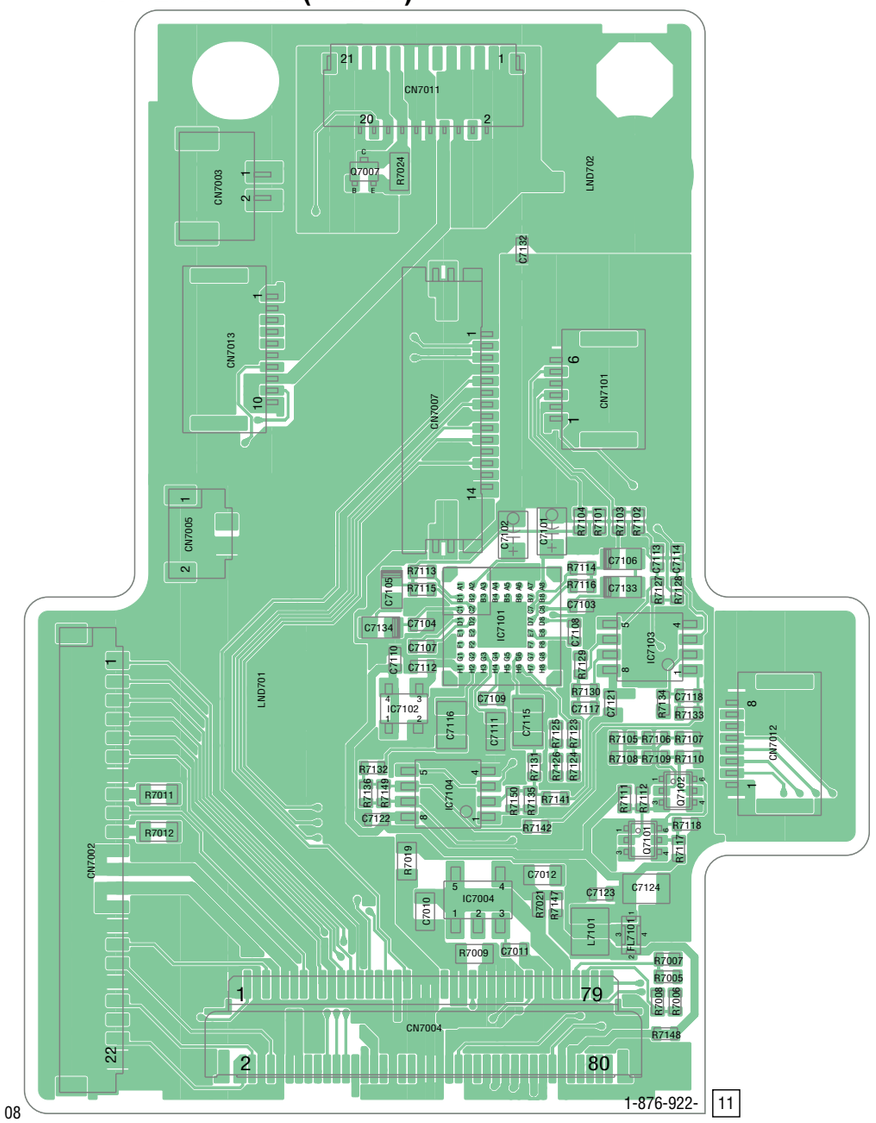
Note: IC2402 is not supplied, but this is included in VC-543 complete board (SERVICE).

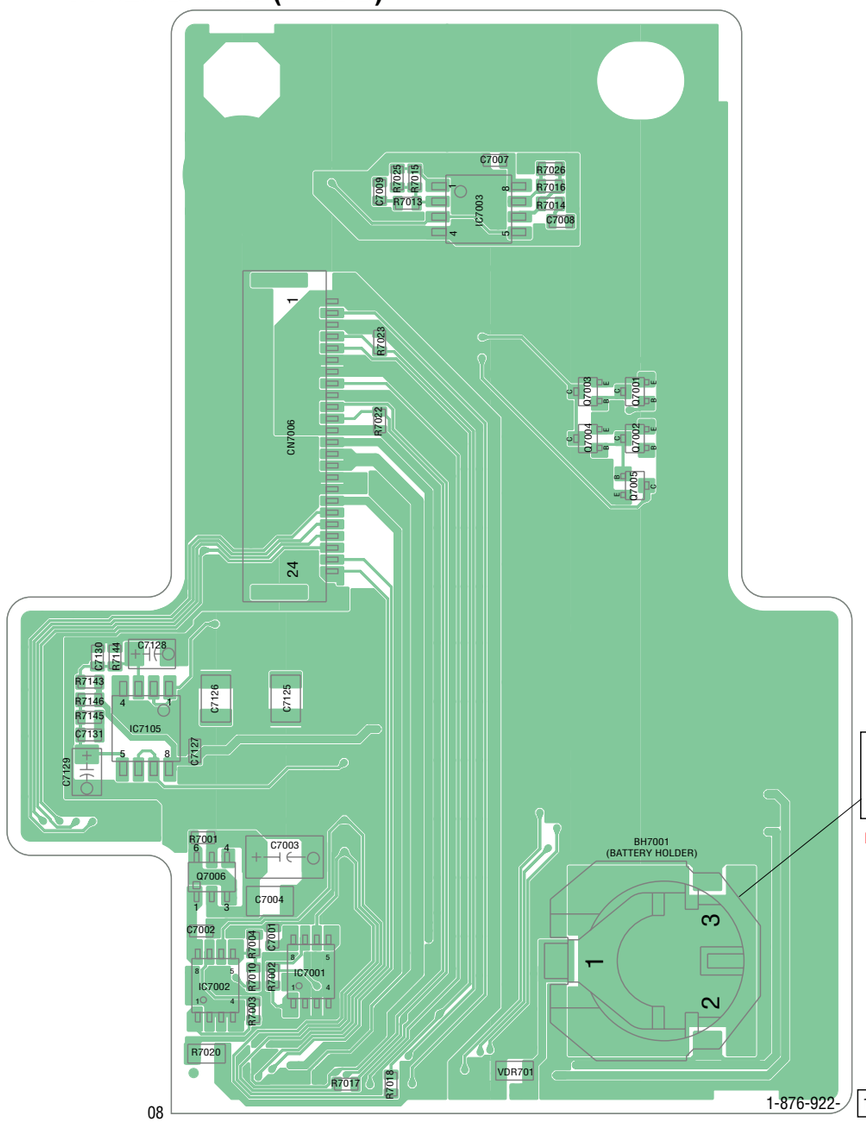
PI-029 (6 layers)

: Uses unleaded solder.

PI-029 BOARD (SIDE A)



PI-029 BOARD (SIDE B)



Note: BT7001 is not included in PI-029 complete board.

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

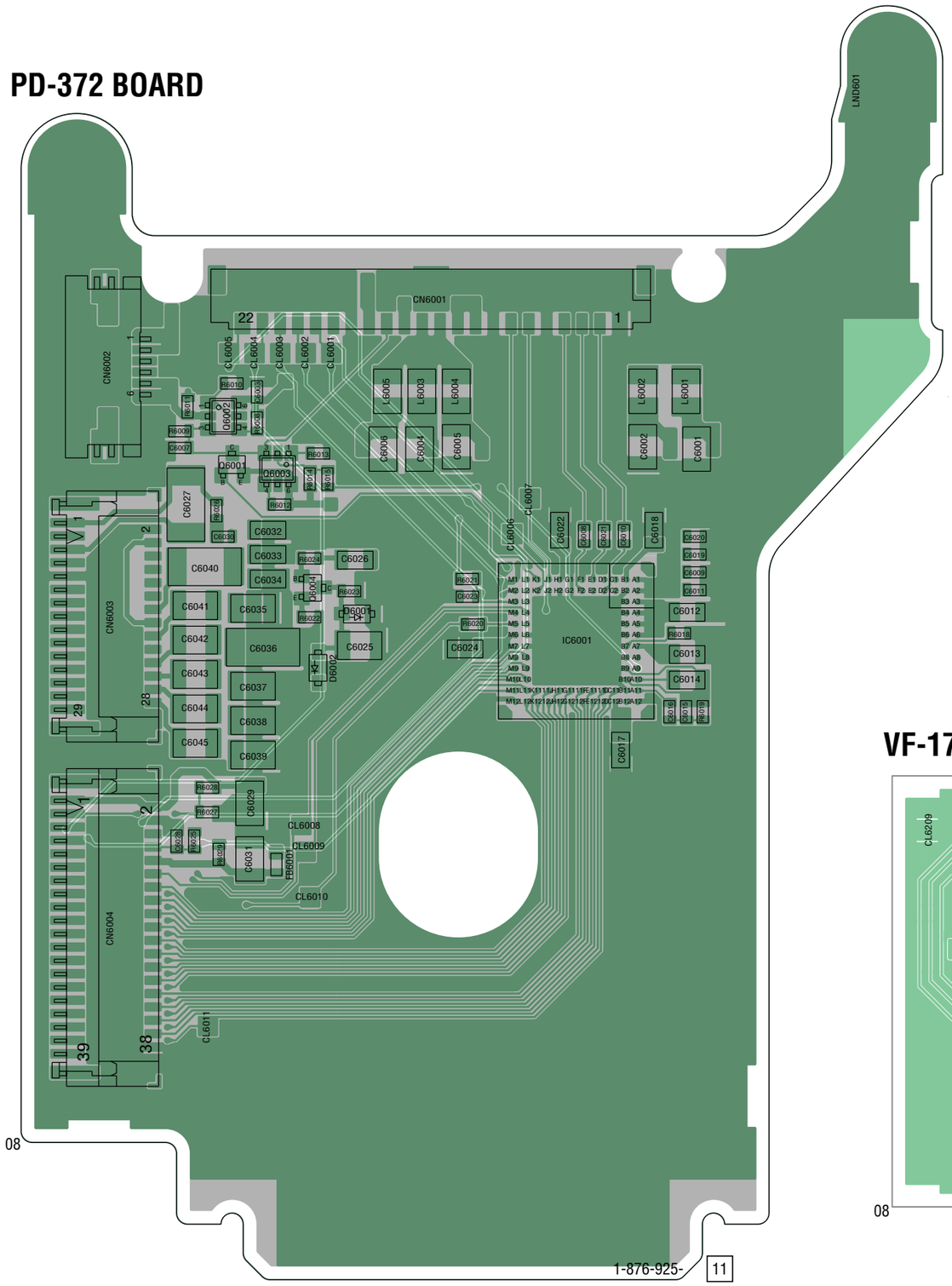
Note: Replace the battery holder (BH7001) together when replacing the lithium storage battery (BT7001) on the PI-029 board. (The battery holder removed once cannot be used again.)
When mounting these parts, mount new battery holder first and attach new lithium storage battery next.

ノート: PI-029基板のリチウム蓄電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換して下さい。（一度使用したバッテリホルダは再使用できません。）
部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム蓄電池を装着して下さい。

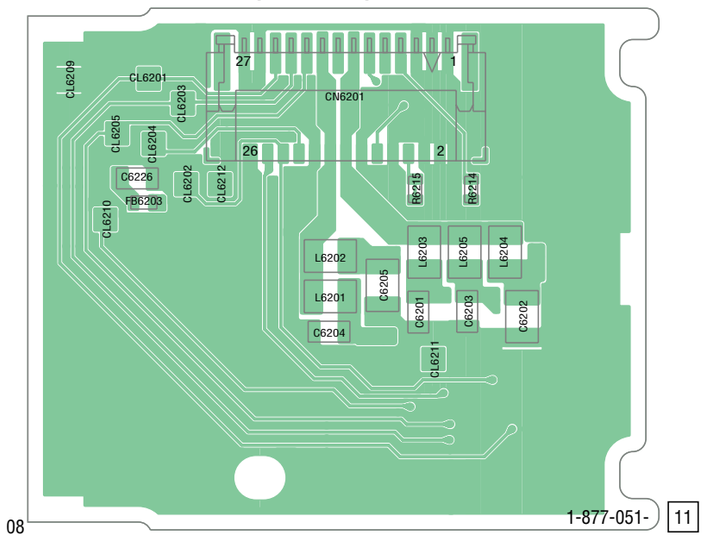
PD-372 (6 layers), VF-178 (6 layers)

: Uses unleaded solder.

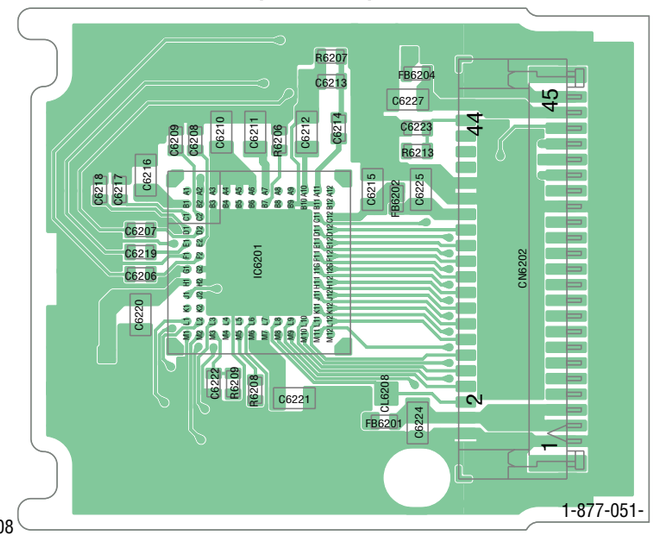
PD-372 BOARD



VF-178 BOARD (SIDE A)



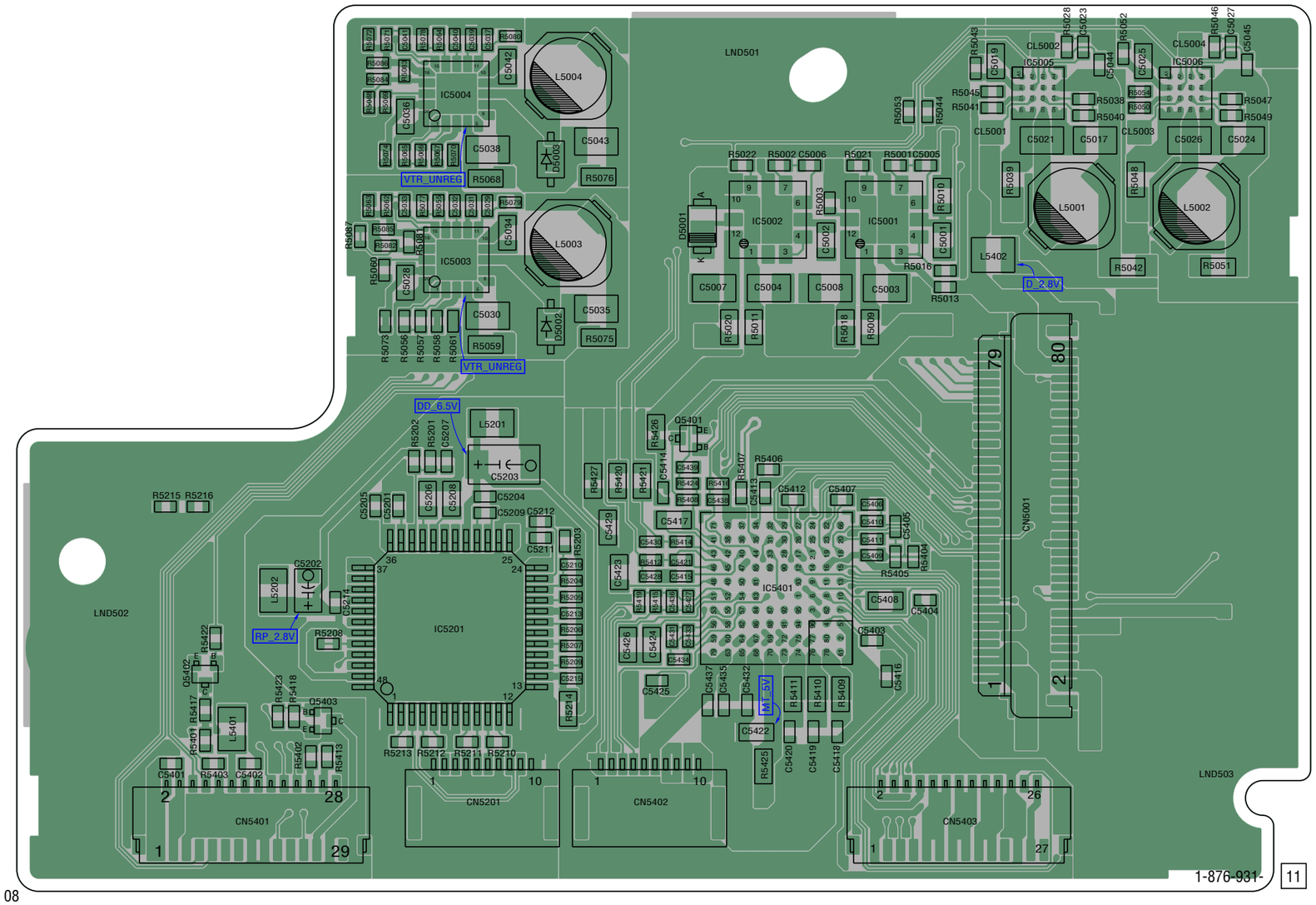
VF-178 BOARD (SIDE B)



MD-141 (6 layers)

: Uses unleaded solder.

MD-141 BOARD



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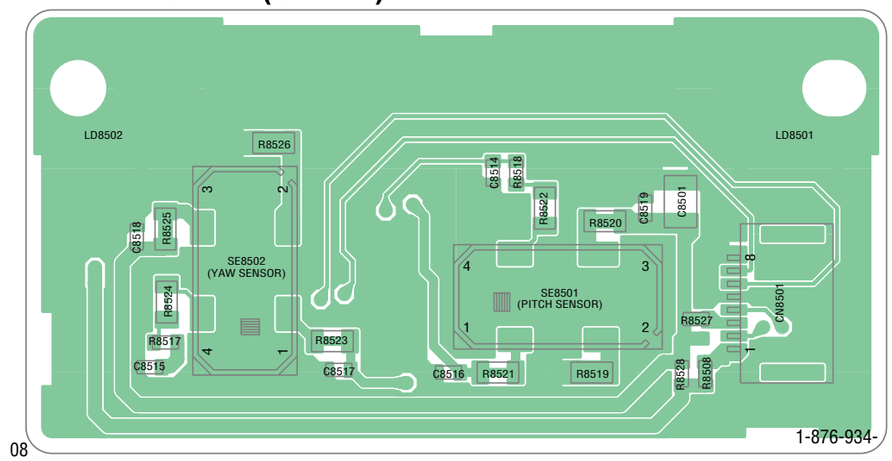
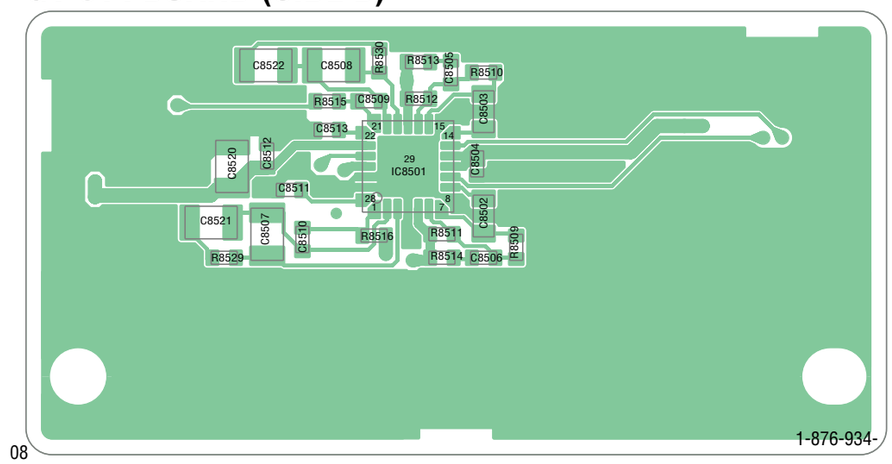
GY-014 (2 layers), CK-204 (2 layers)

: Uses unleaded solder.

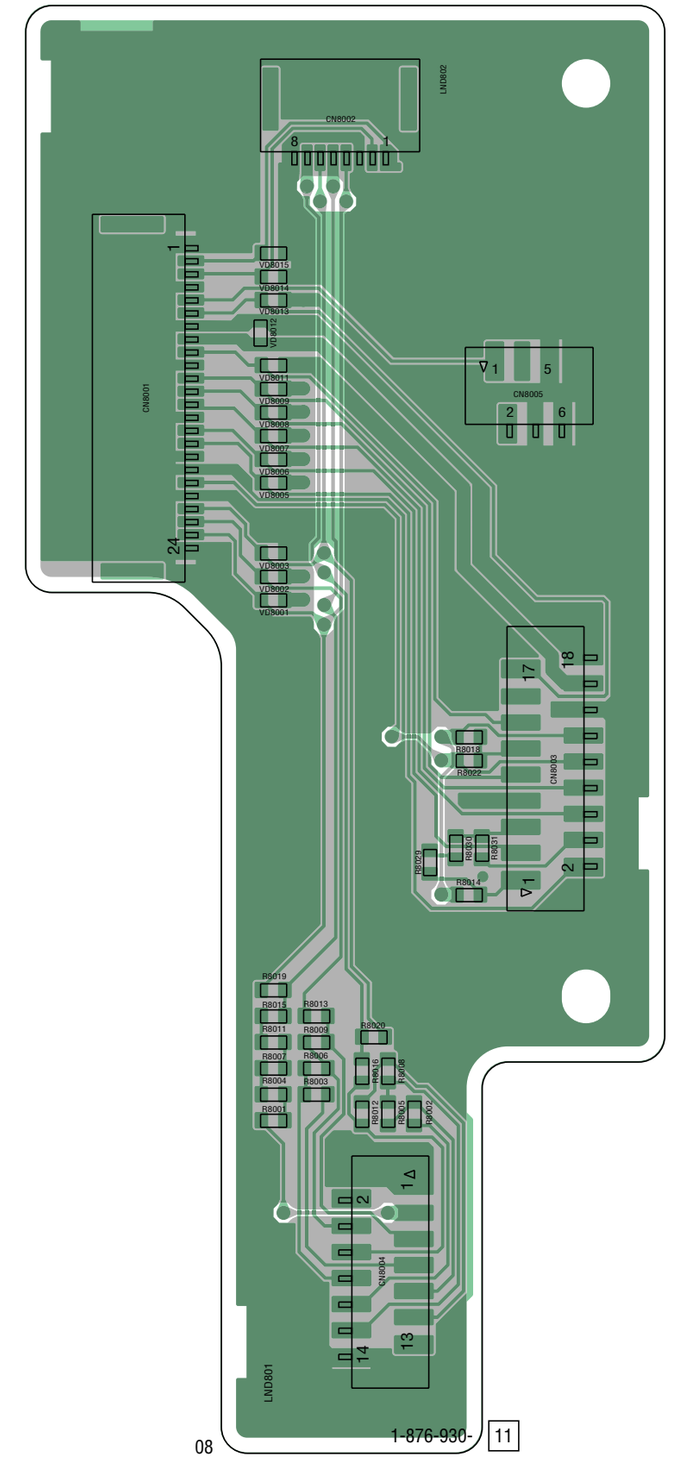
GY-014 BOARD (SIDE A)



GY-014 BOARD (SIDE B)



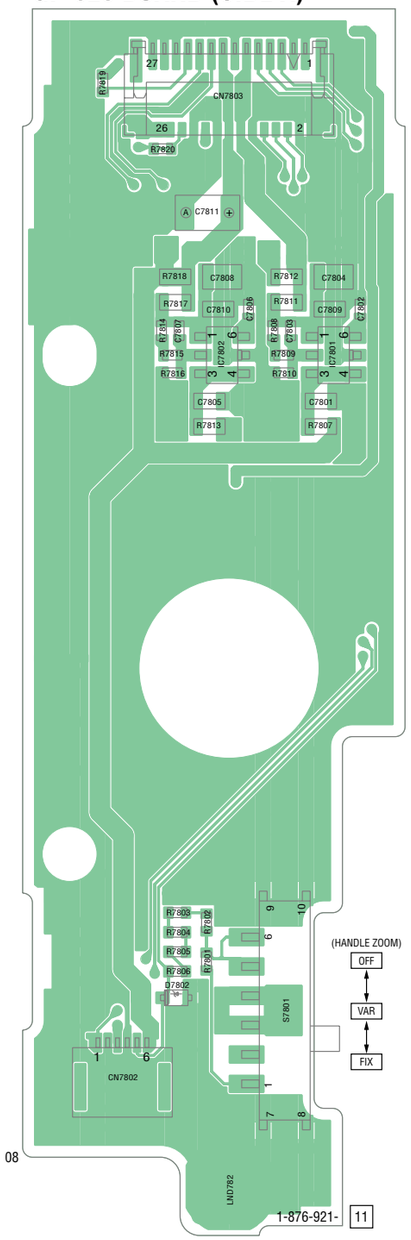
CK-204 BOARD



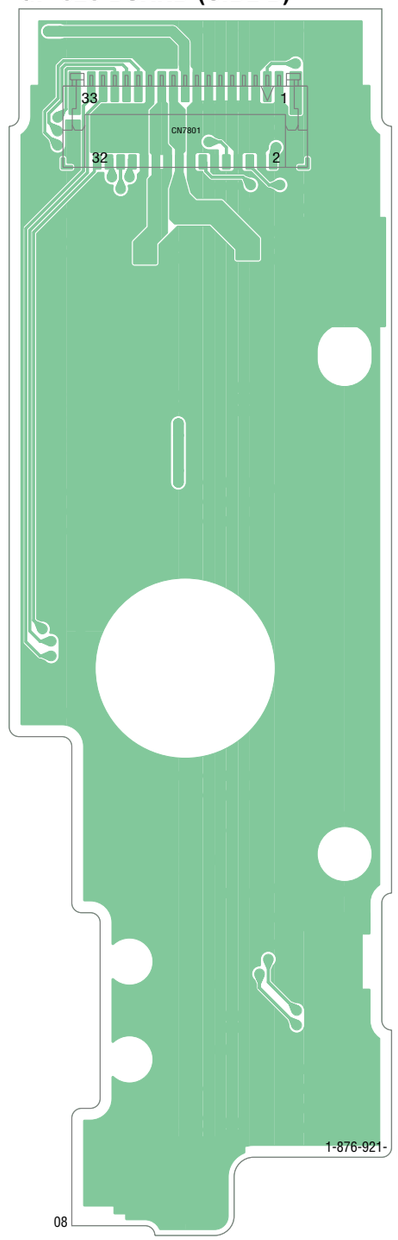
GP-025 (2 layers), HP-153 (2 layers), JK-376 (2 layers)

: Uses unleaded solder.

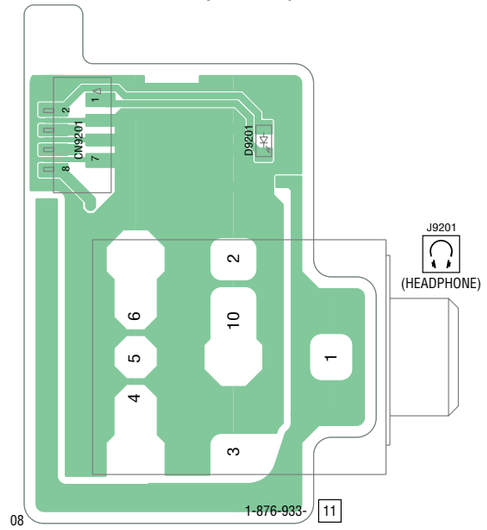
GP-025 BOARD (SIDE A)



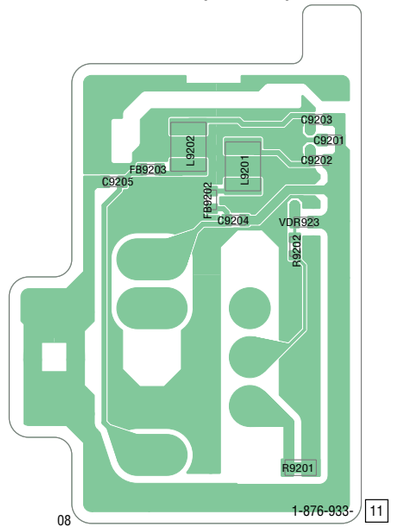
GP-025 BOARD (SIDE B)



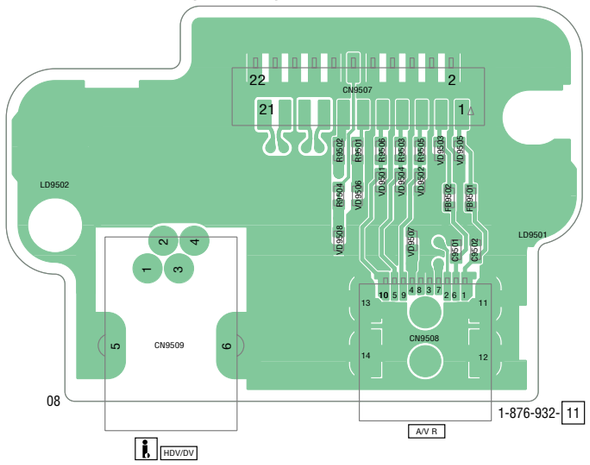
HP-153 BOARD (SIDE A)



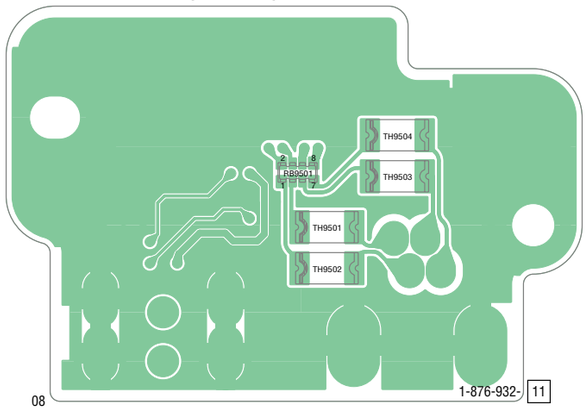
HP-153 BOARD (SIDE B)



JK-376 BOARD (SIDE A)



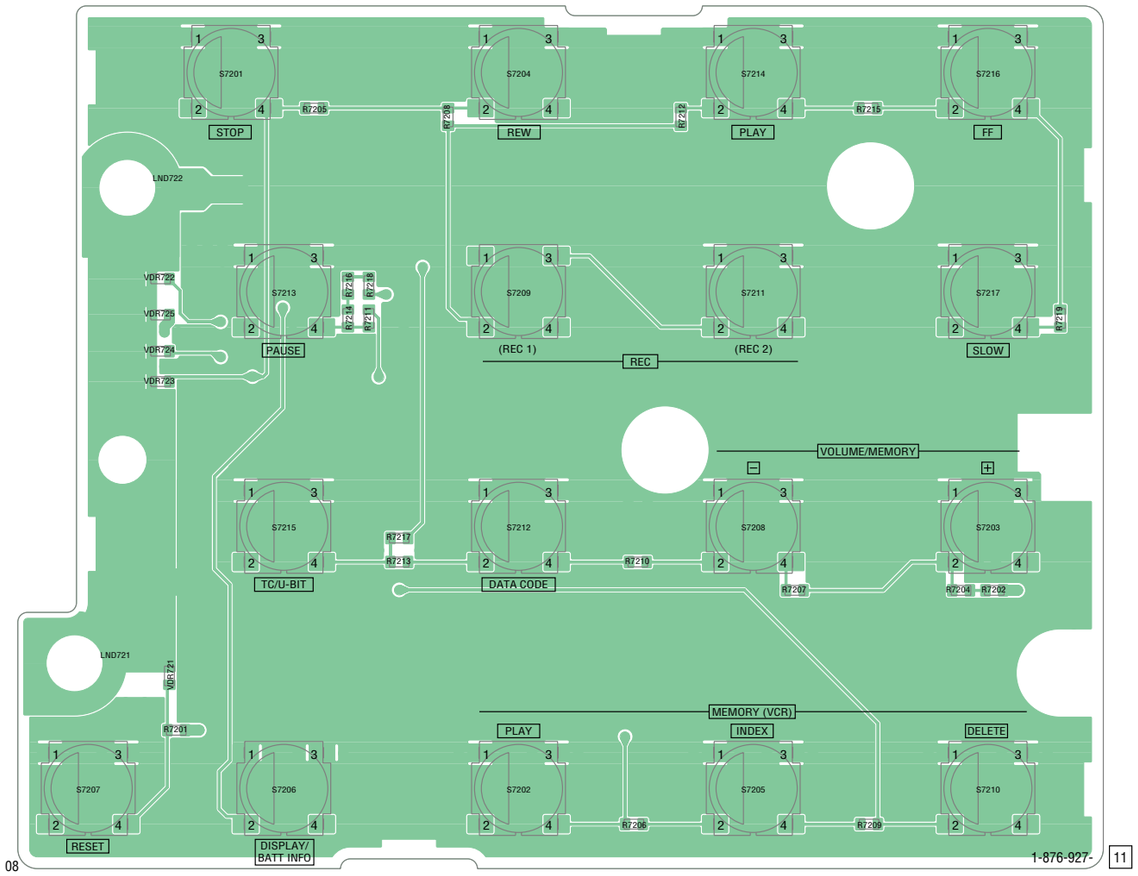
JK-376 BOARD (SIDE B)



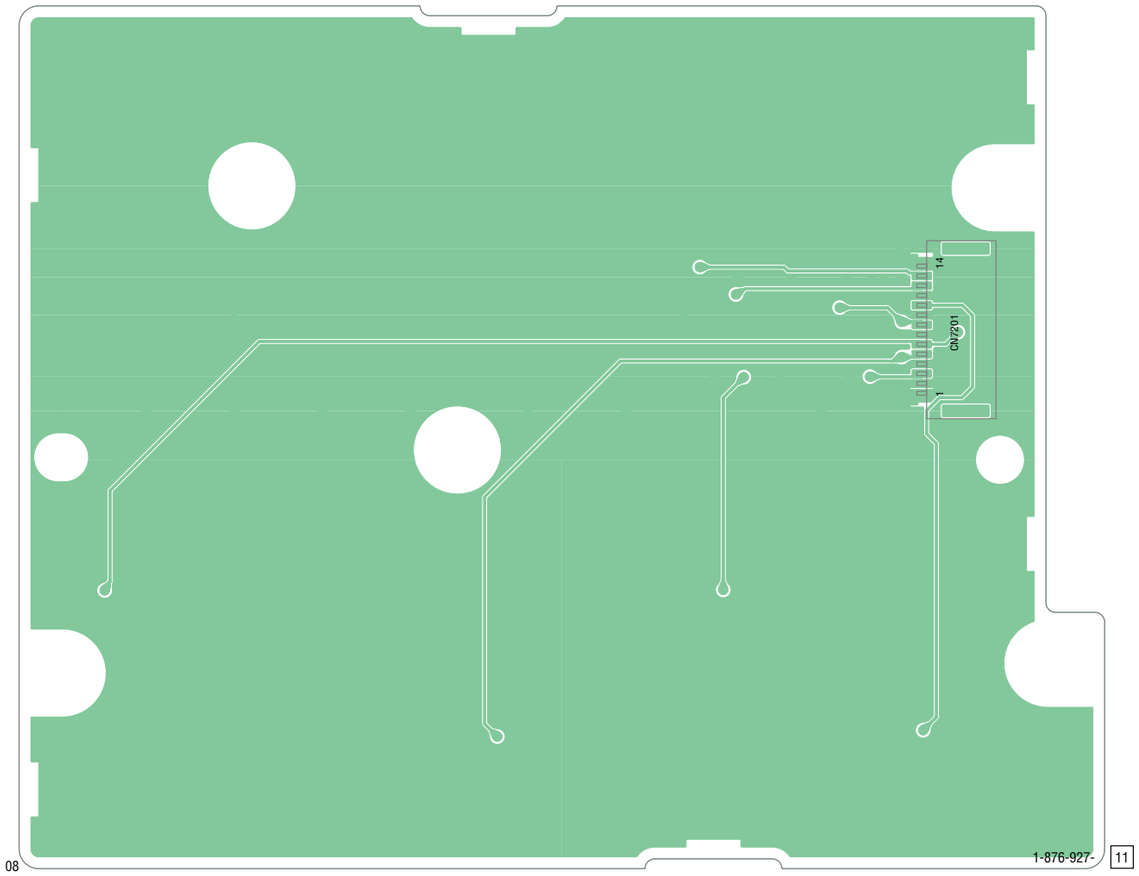
KY-105 (2 layers), MA-454 (2 layers)

: Uses unleaded solder.

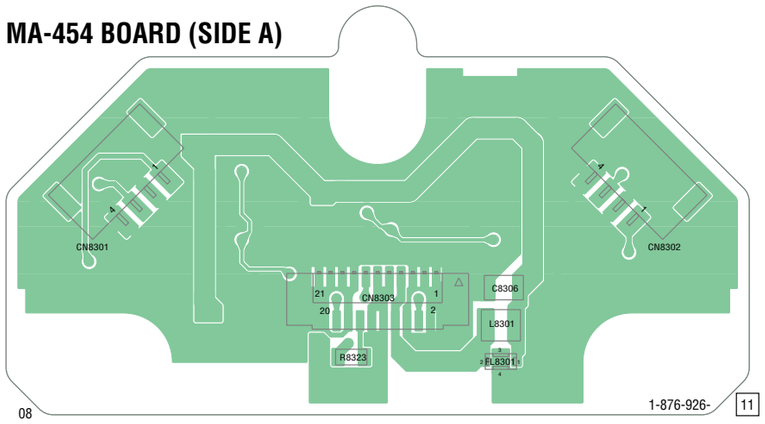
KY-105 BOARD (SIDE A)



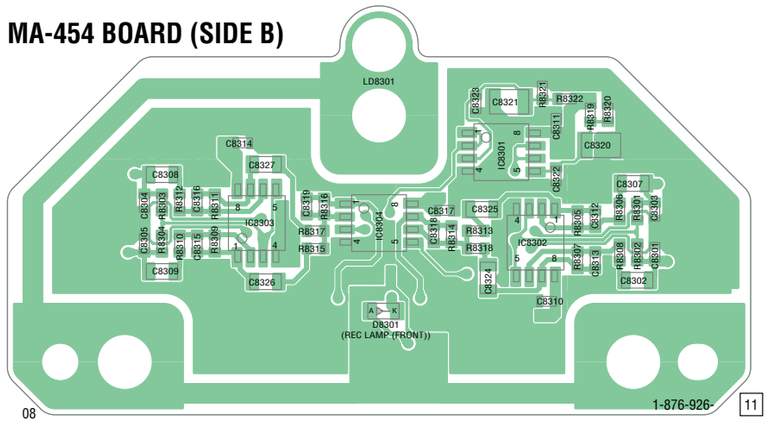
KY-105 BOARD (SIDE B)



MA-454 BOARD (SIDE A)



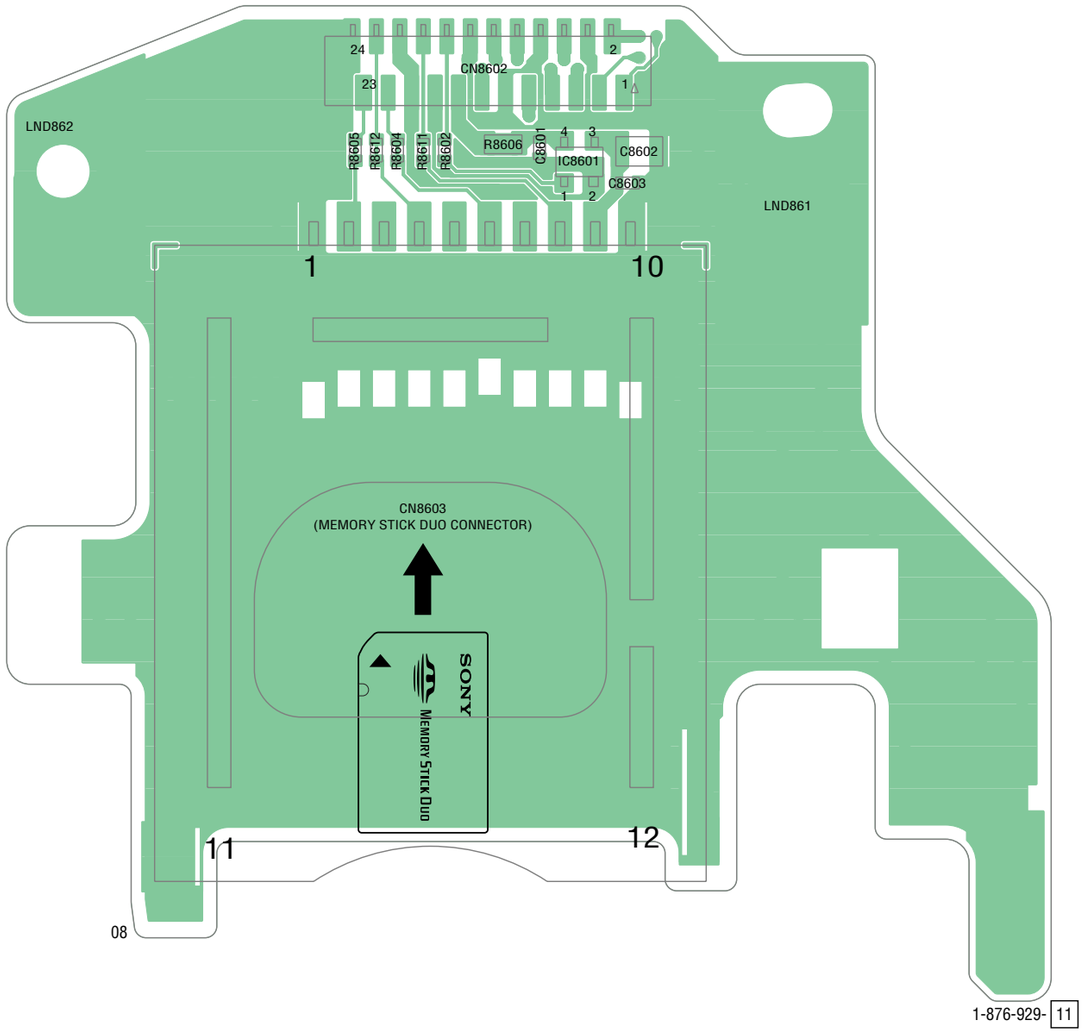
MA-454 BOARD (SIDE B)



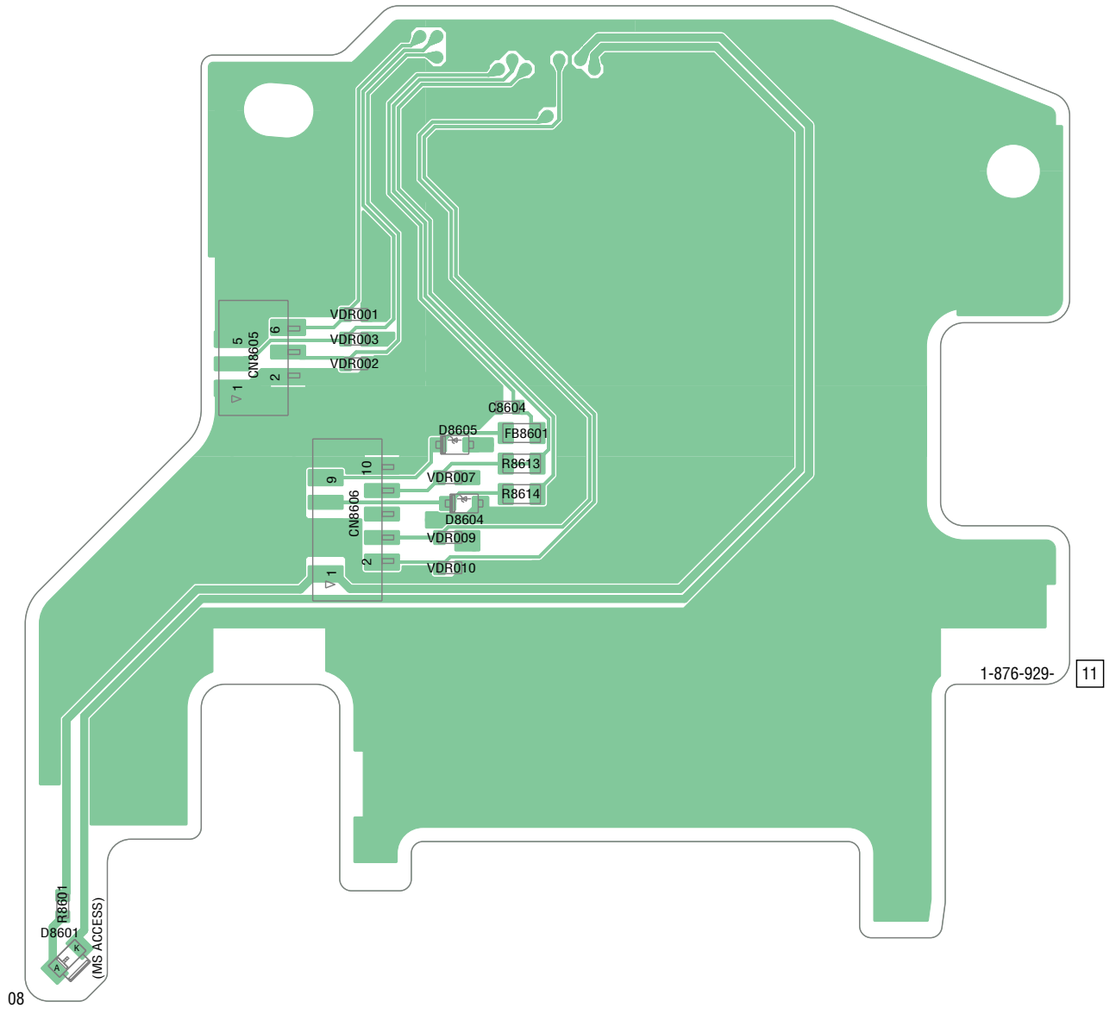
MS-405 (2 layers)

: Uses unleaded solder.

MS-405 BOARD (SIDE A)



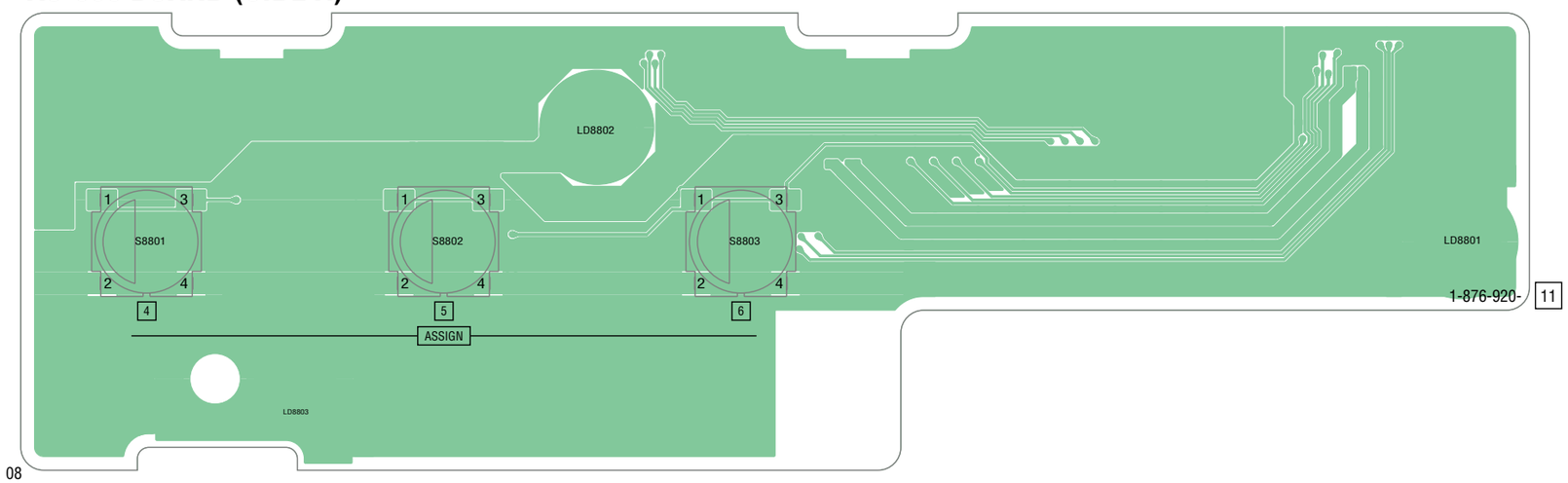
MS-405 BOARD (SIDE B)



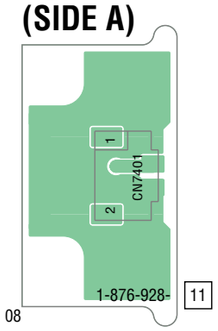
AS-060 (6 layers), HT-002 (2 layers)

: Uses unleaded solder.

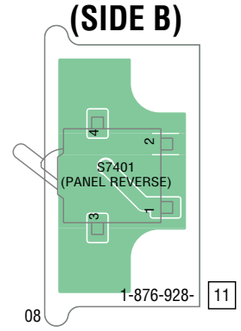
AS-060 BOARD (SIDE A)



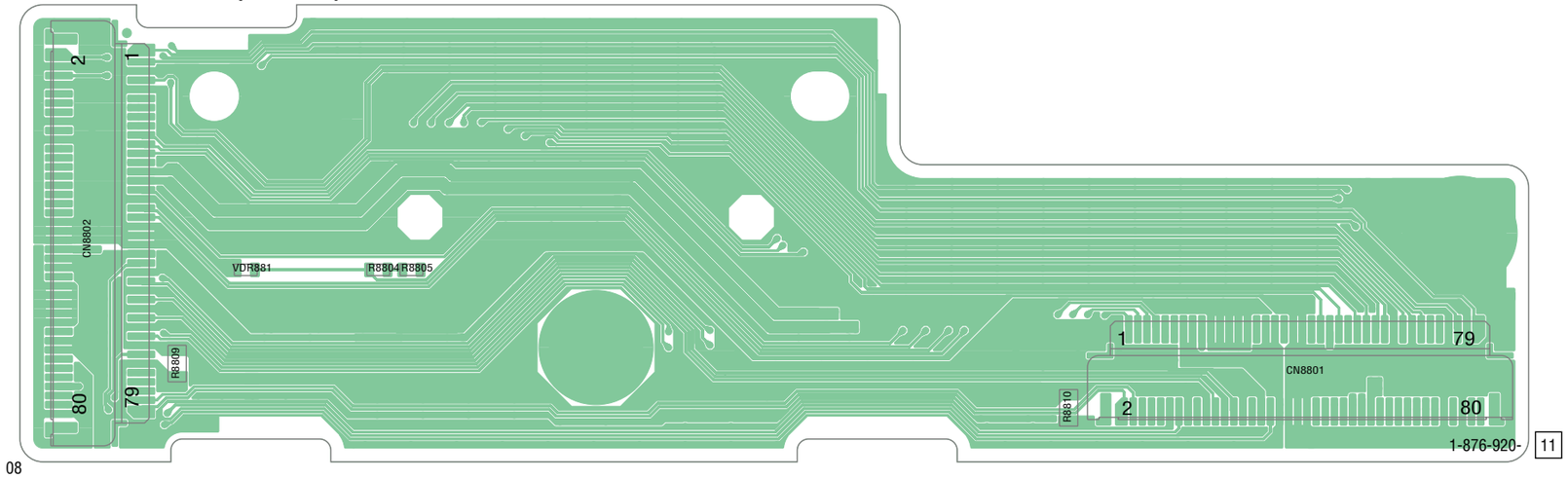
HT-002 BOARD (SIDE A)



HT-002 BOARD (SIDE B)



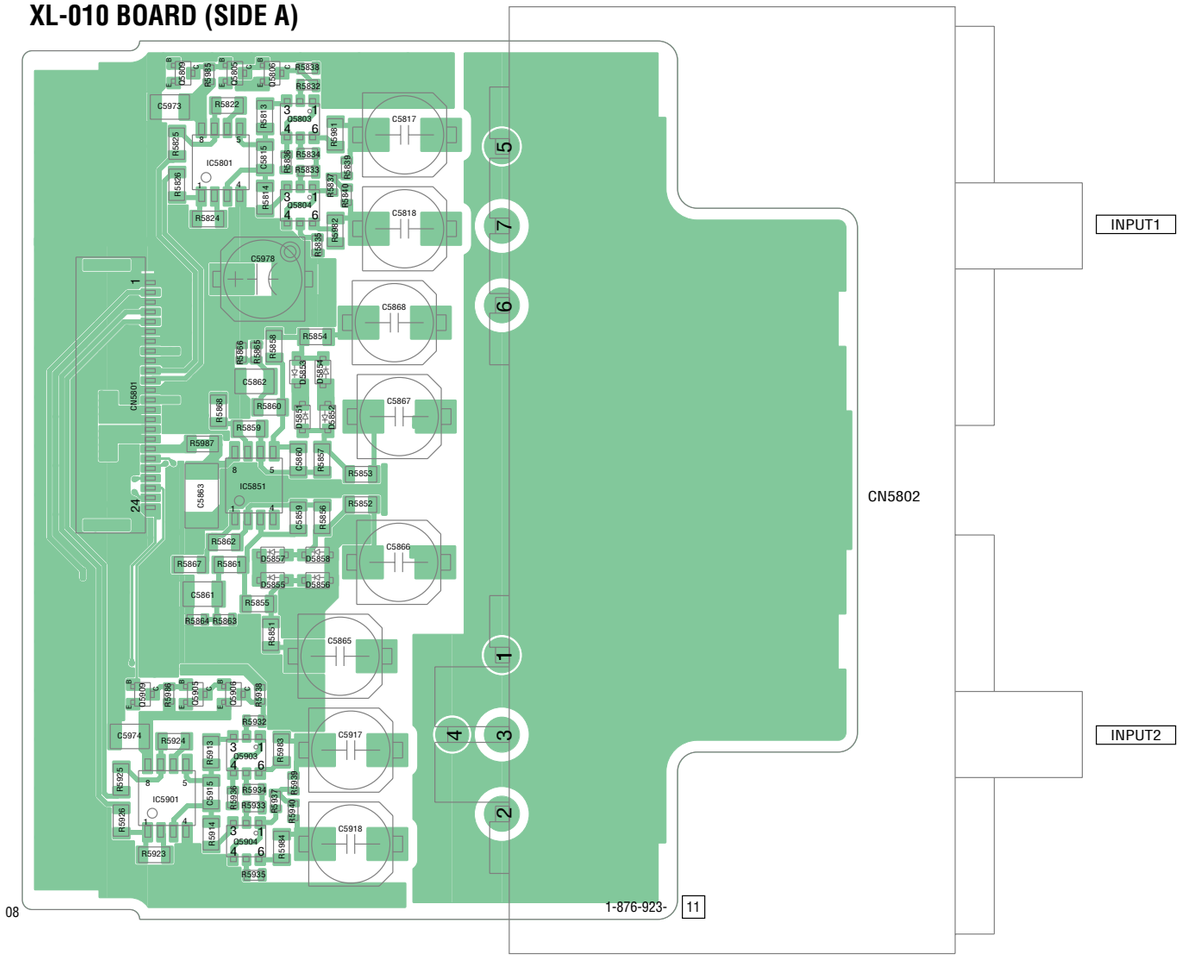
AS-060 BOARD (SIDE B)



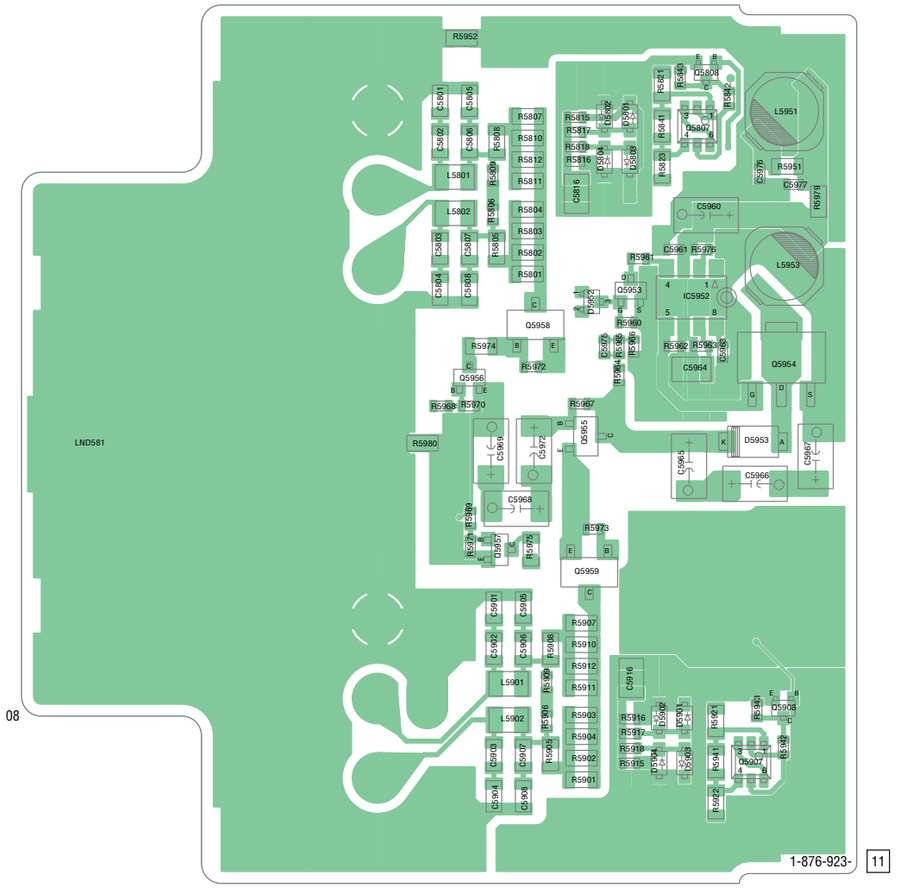
XL-010 (6 layers)

: Uses unleaded solder.

XL-010 BOARD (SIDE A)



XL-010 BOARD (SIDE B)

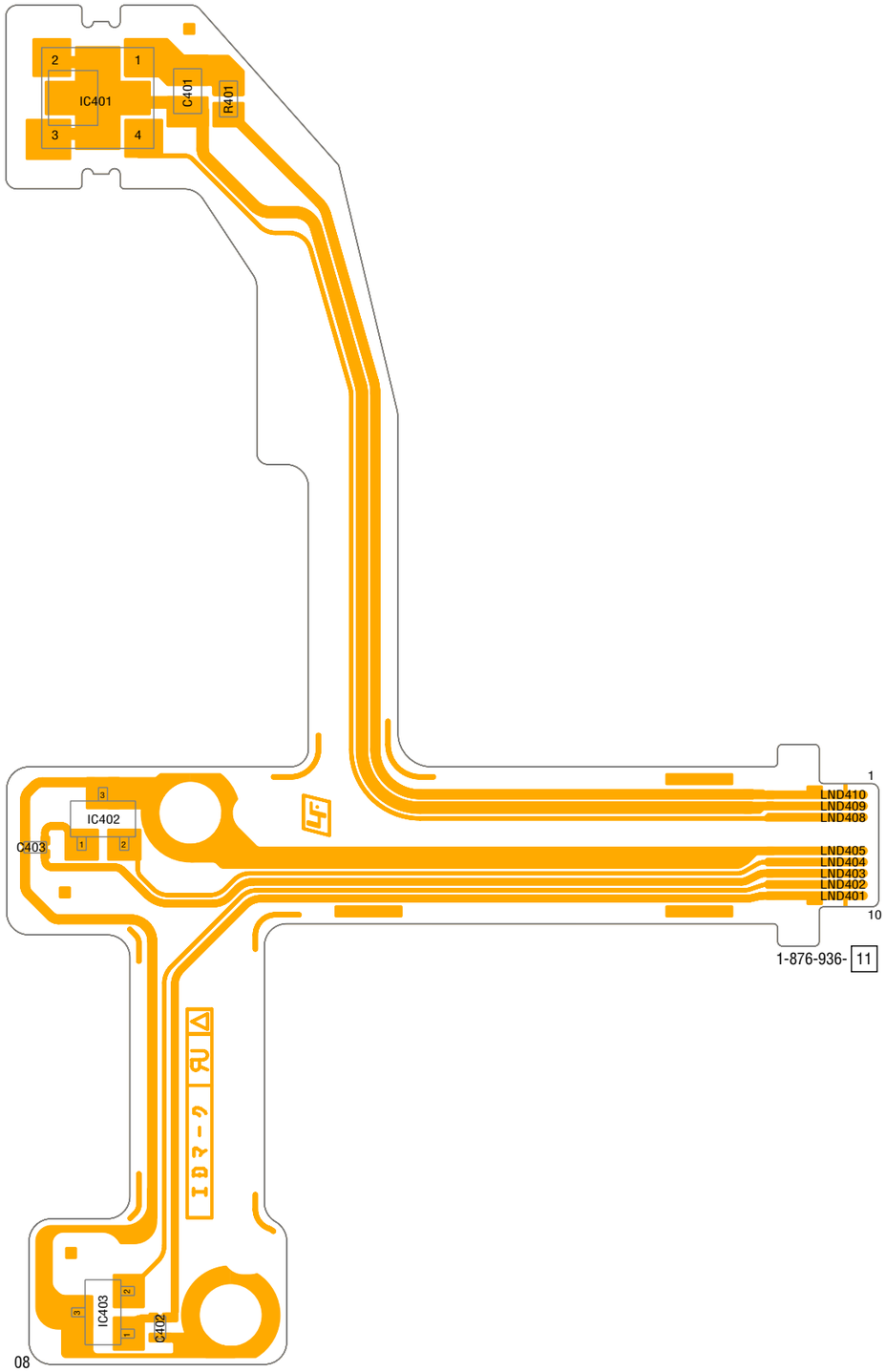


Note: IC5952 is not supplied, but this is included in XL-010 complete board.

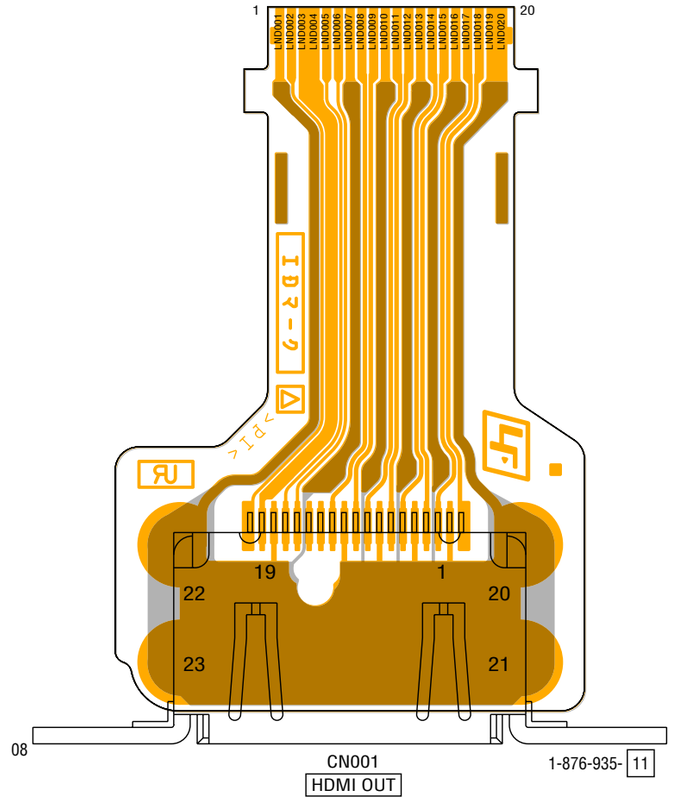
FP-966 (1 layer), FP-965 (2 layers) , FP-969 (1 layer)

: Uses unleaded solder.

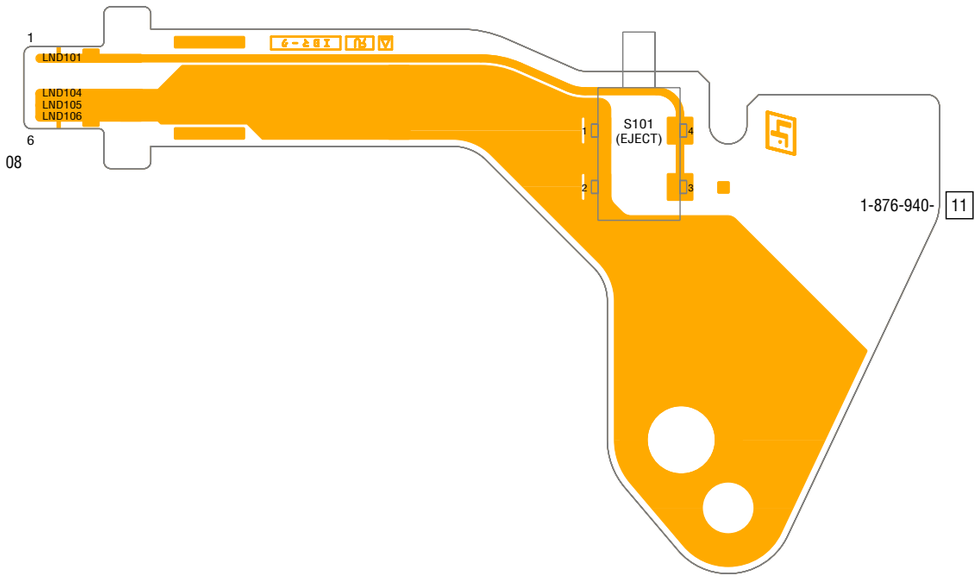
FP-966 FLEXIBLE BOARD



FP-965 FLEXIBLE BOARD



FP-969 FLEXIBLE BOARD



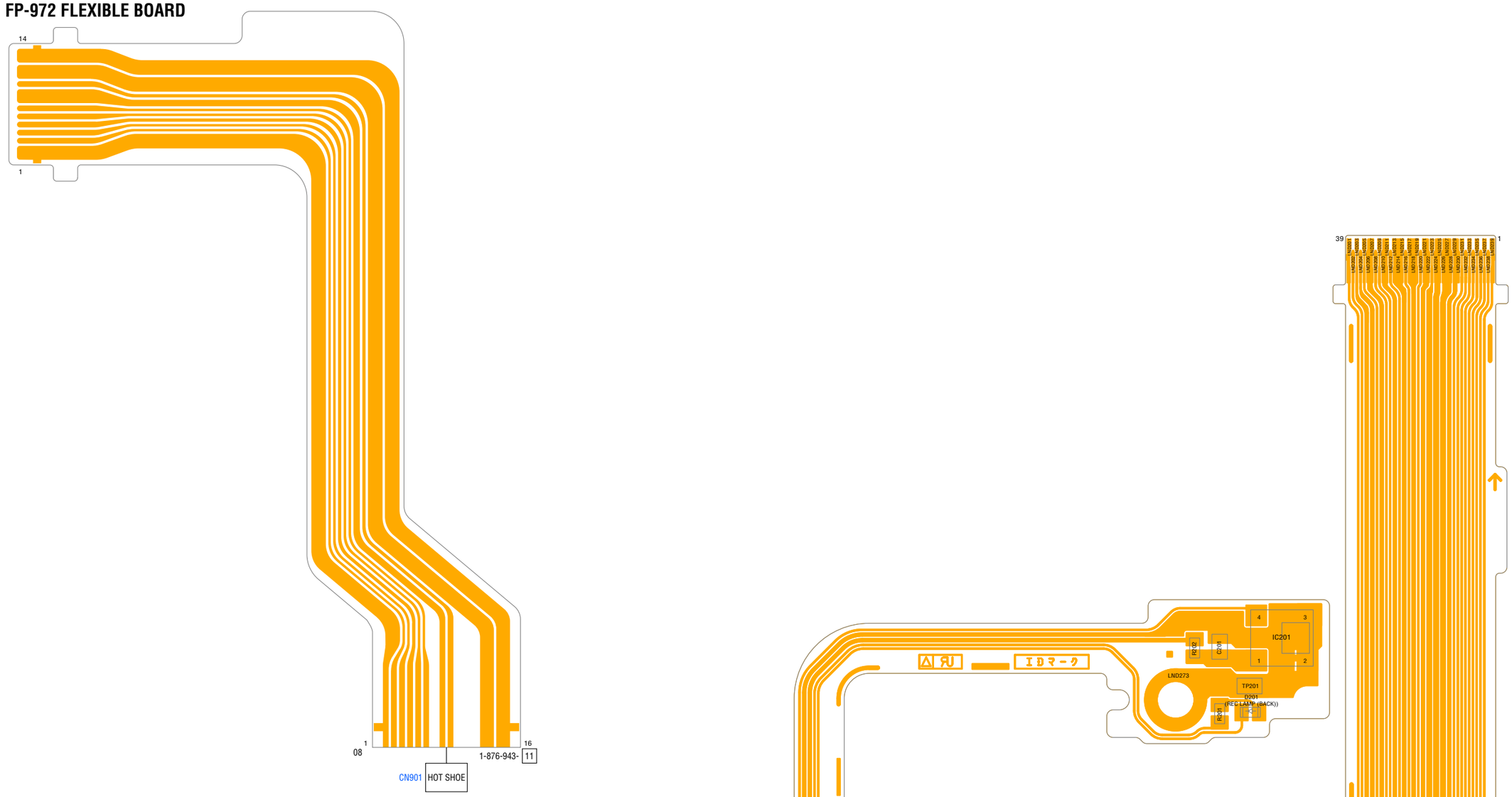
Ver. 1.1 2008.12

The changed portions from Ver. 1.0 are shown in blue.

FP-972 (1 layer), FP-967 (1 layer)

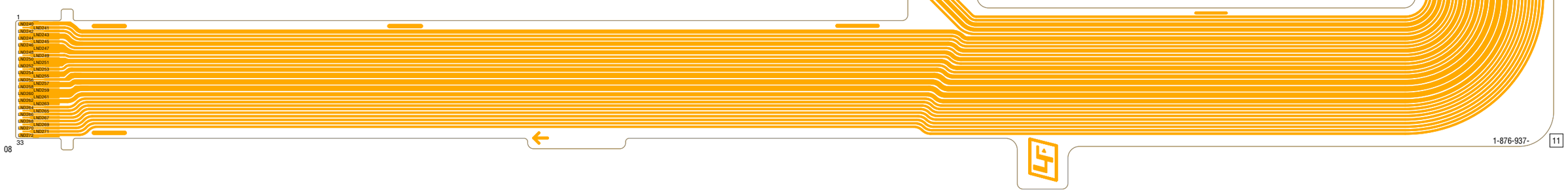
: Uses unleaded solder.

FP-972 FLEXIBLE BOARD



Note: CN901 is not included in FP-972 flexible board.

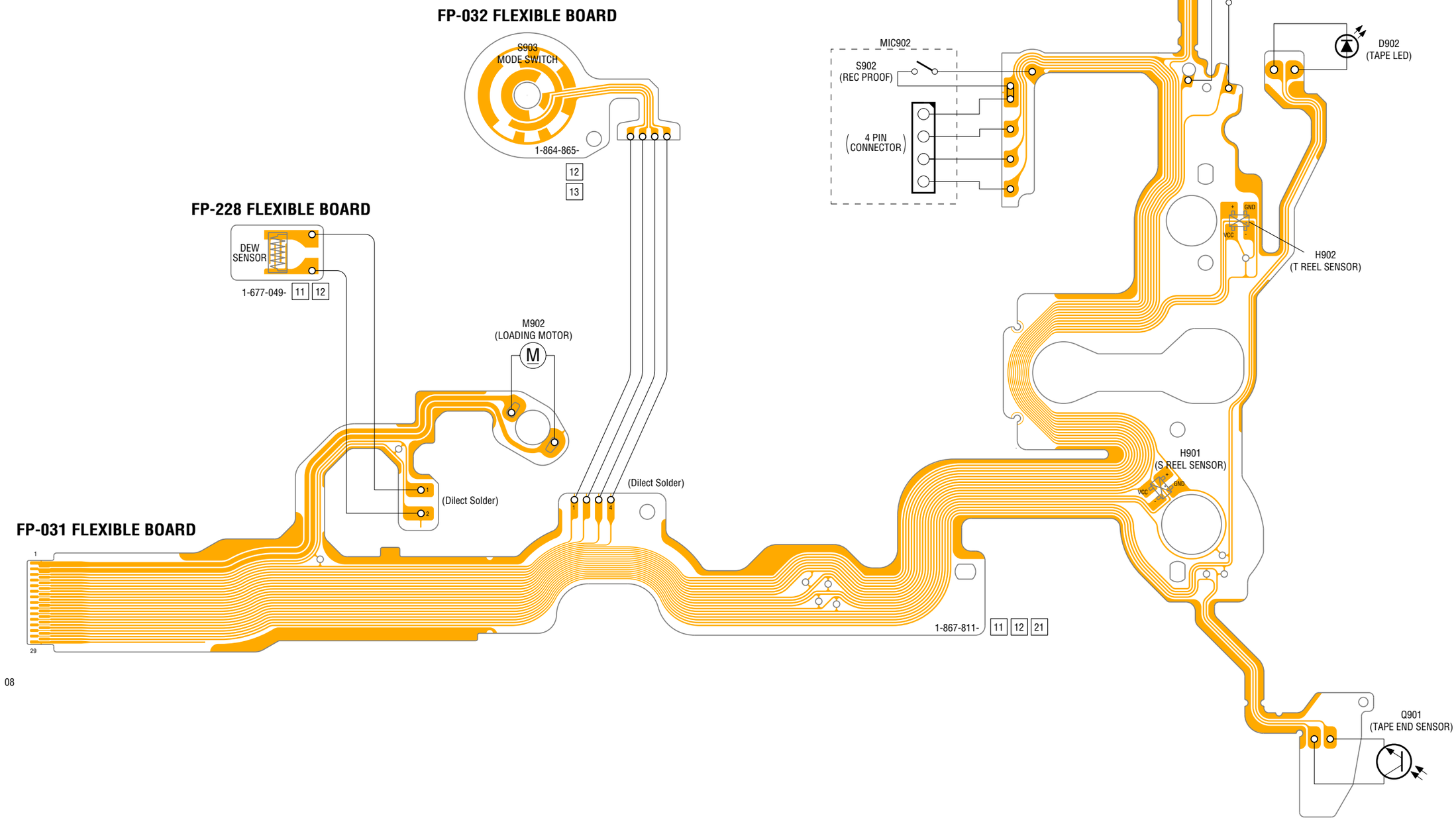
FP-967 FLEXIBLE BOARD



FP-031 (1 layer), FP-032 (1 layer), FP-228 (1 layer)

: Uses unleaded solder.

Note: The FP-031 and FP-032 are supplied as the assembled part of
the MD (N220) sub ass'y (S) A by attaching them with the adhesive agent.
These parts are not separately supplied because assembling of
these parts requires high accuracy.



08

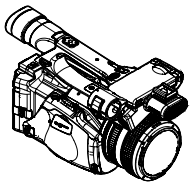
NOTE

5. REPAIR PARTS LIST (1/2)

TO (2/2)

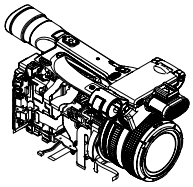
NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link EXPLODED VIEWS



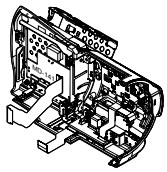
A

OVERALL SECTION-1



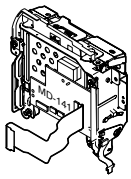
B

OVERALL SECTION-2



C

CABINET (R) SECTION

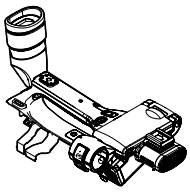


D

MD SECTION

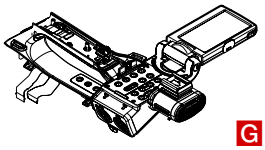
E

LENS SECTION



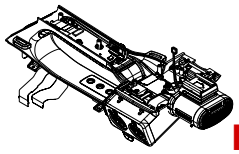
F

HANDLE SECTION-1



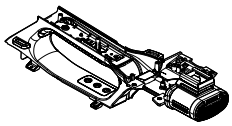
G

HANDLE SECTION-2



H

HANDLE SECTION-3

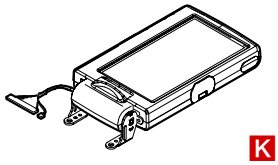


I

HANDLE SECTION-4

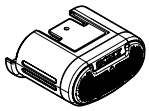
J

EVF SECTION



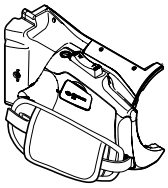
K

LCD SECTION



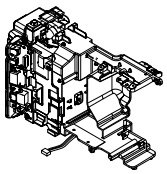
L

MICROPHONE SECTION



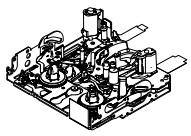
M

CABINET (L) SECTION



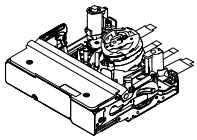
N

BT PANEL SECTION



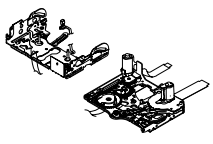
O

MECHANISM DECK SECITON



P

LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-1



Q

LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-2

NOTE

5. REPAIR PARTS LIST (2/2)

TO (1/2)

NOTE: Characters A to Z of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

ELECTRICAL PARTS LIST

ACCESSORIES

AS-060 BOARD I	FP-971 FLEXIBLE BOARD M	HT-002 BOARD K
CK-204 BOARD C	FP-972 FLEXIBLE BOARD N	JK-376 BOARD N
CM-097 BOARD E	FP-973 FLEXIBLE BOARD A	KY-105 BOARD G
CM-104 BOARD E	FP-974 FLEXIBLE BOARD J	MA-454 BOARD L
FP-031 FLEXIBLE BOARD O	FP-975 FLEXIBLE BOARD L	MD-141 BOARD D
FP-032 FLEXIBLE BOARD O	FP-981 FLEXIBLE BOARD I	MS-405 BOARD M
FP-228 FLEXIBLE BOARD Q	FP-982 FLEXIBLE BOARD I	PD-372 BOARD K
FP-776 FLEXIBLE BOARD J	FP-983 FLEXIBLE BOARD D	PI-029 BOARD G
FP-965 FLEXIBLE BOARD N	GP-025 BOARD H	VC-543 BOARD A
FP-966 FLEXIBLE BOARD G	GY-014 BOARD E	VF-178 BOARD J
FP-967 FLEXIBLE BOARD H	HP-153 BOARD N	XL-010 BOARD H
FP-969 FLEXIBLE BOARD D		

5. REPAIR PARTS LIST

(ENGLISH)

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

(JAPANESE)

【使用上の注意】

- **ここに記載されている部品は, 補修用部品であるため, 回路図及びセットに付いている部品と異なる場合があります。**
- **-XX, -Xは標準化部品のため, セットに付いている部品と異なる場合があります。**
- ***印の部品は常備在庫しておりません。**
- **コンデンサの単位でuFはµFを示します。**
- **抵抗の単位Ωは省略してあります。**
  金　　被：金属被膜抵抗。
  サンキン：酸化金属被膜抵抗。
- **インダクタの単位でuHはµHを示します。**
- **半導体の名称でuA..., uPA..., uPB..., uPC..., uPD...等はそれぞれµA..., µPA..., µPB..., µPC..., µPD...を示します。**

お願い
図面番号で部品を指定するときは基板名又はブロックを併せて指定してください。

⚠印の部品，または⚠印付の点線で囲まれた部品は，安全性を維持するために，重要な部品です。
従って交換時は,必ず指定の部品を使用してください。

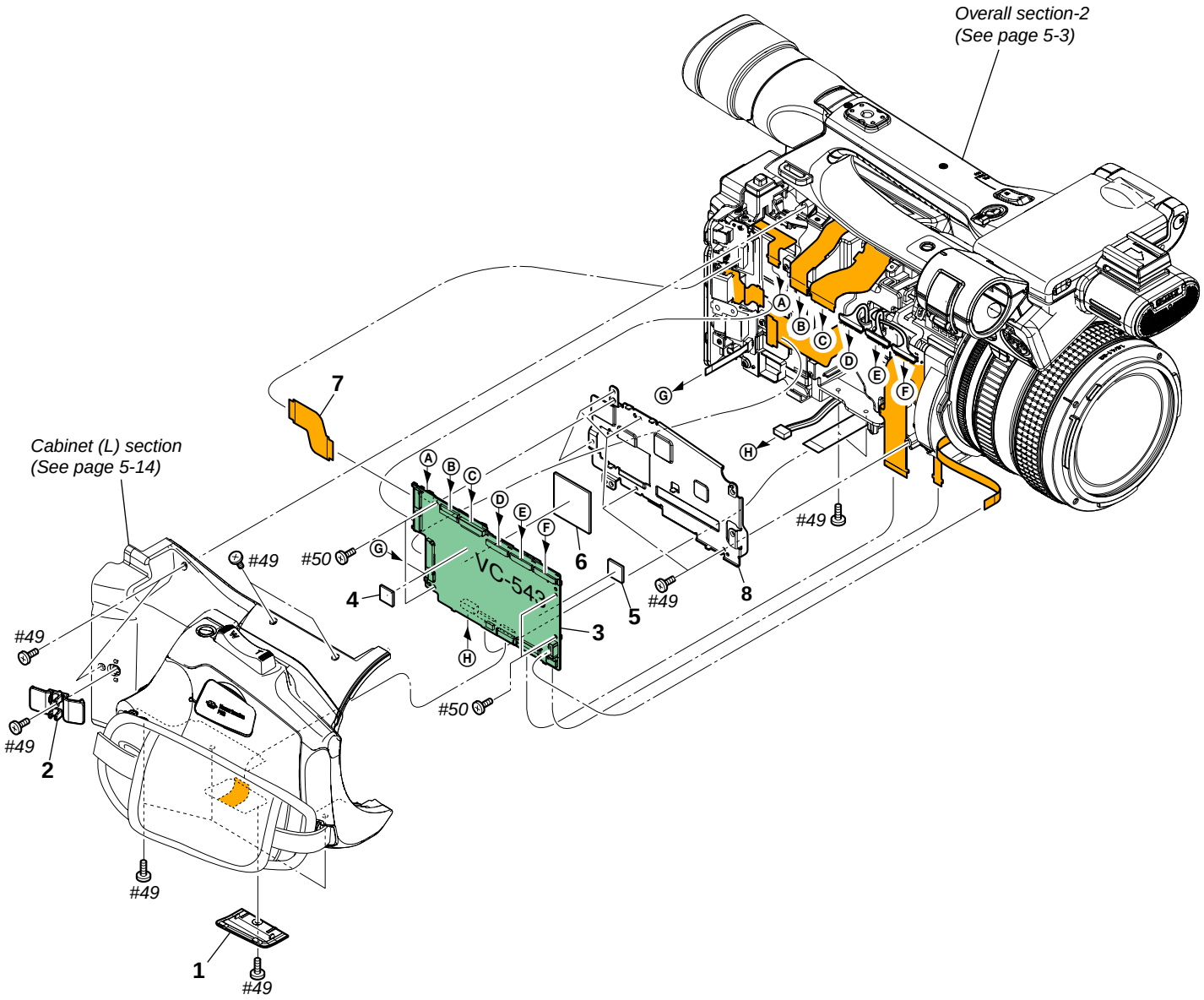
- Abbreviation
  CH : Chinese model
  CND : Canadian model
  J : Japanese model

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

DISASSEMBLY HARDWARE LIST

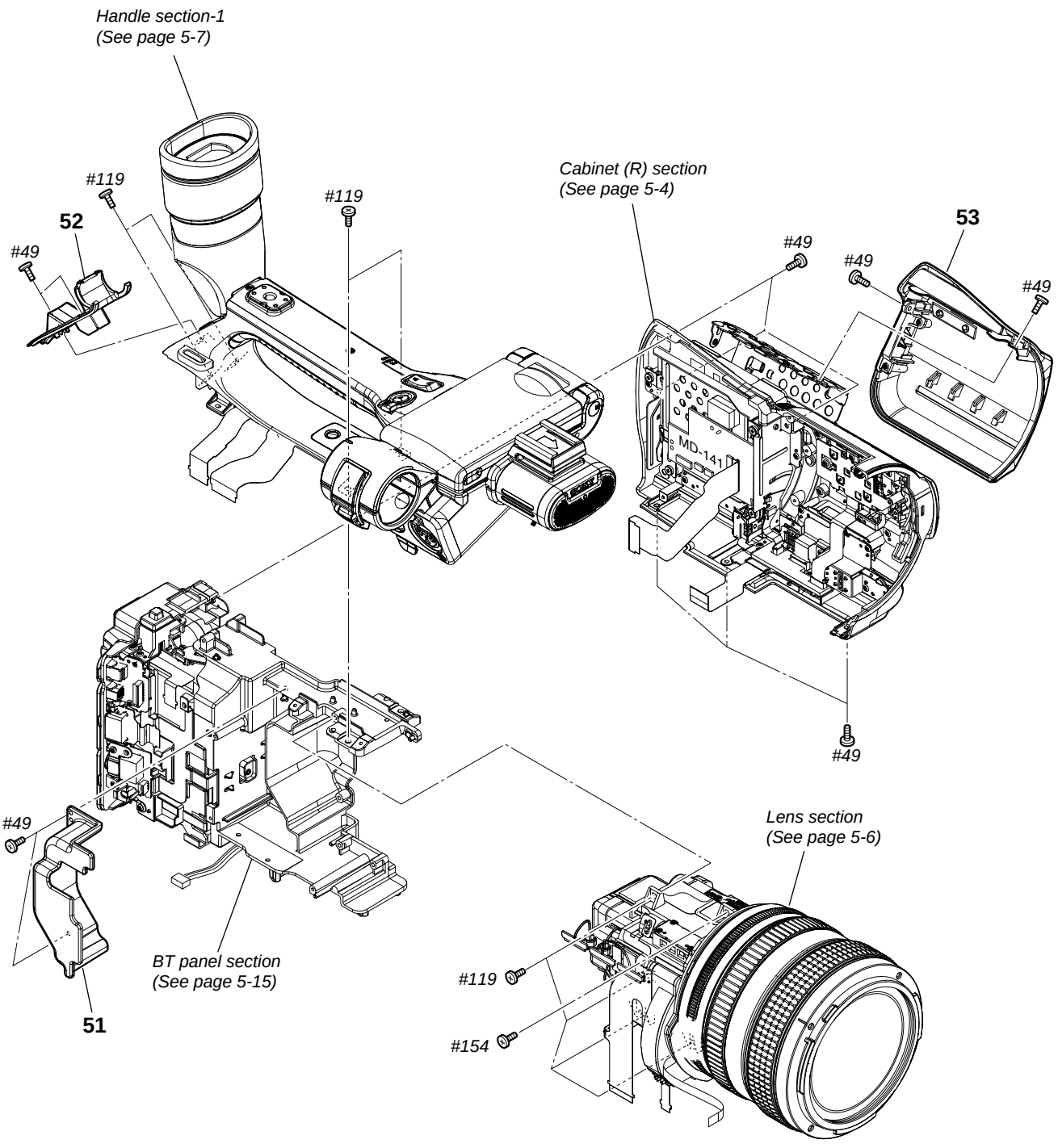
5-1-1. OVERALL SECTION-1



Ref. No.	Part No.	Description
1	4-119-235-11	LID, CPC
2	4-131-320-01	CLAMP, AV
3	A-1616-757-A	VC-543 BOARD, COMPLETE (SERVICE) (Z5J/Z5N/Z5U)
3	A-1616-758-A	VC-543 BOARD, COMPLETE (SERVICE) (Z5C/Z5E/Z5P)
4	4-121-128-01	SHEET (VC), ELECTROSTATIC
5	4-119-238-01	SHEET (1212), VC RADIATION
6	4-119-362-01	SHEET (2828), LENS RADIATION
7	1-876-944-11	FP-973 FLEXIBLE BOARD
8	4-119-236-01	FRAME, MAIN
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-2. OVERALL SECTION-2

DISASSEMBLY HARDWARE LIST



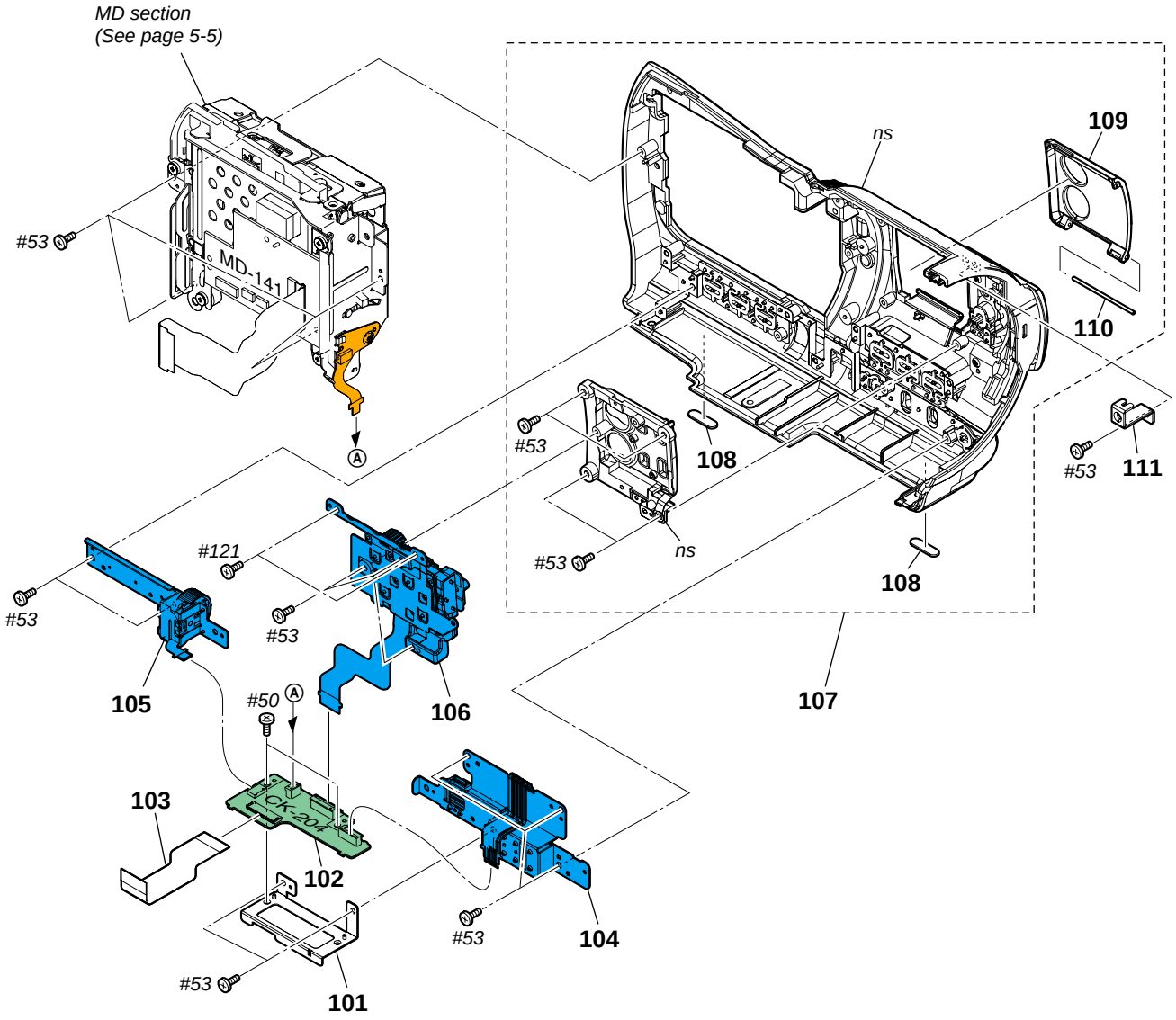
Ref. No.	Part No.	Description
51	4-119-233-01	COVER, CM VENTILATION
52	X-2320-882-1	COVER (93000) ASSY, (REAR)
53	X-2320-890-1	LID (93000) ASSY, CS

Ref. No.	Part No.	Description
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)
#154	7-627-556-97	SCREW, PRECISION +P2.6X8 TYPE 1 (Silver)

5-1-3. CABINET (R) SECTION

ns: not supplied

DISASSEMBLY HARDWARE LIST

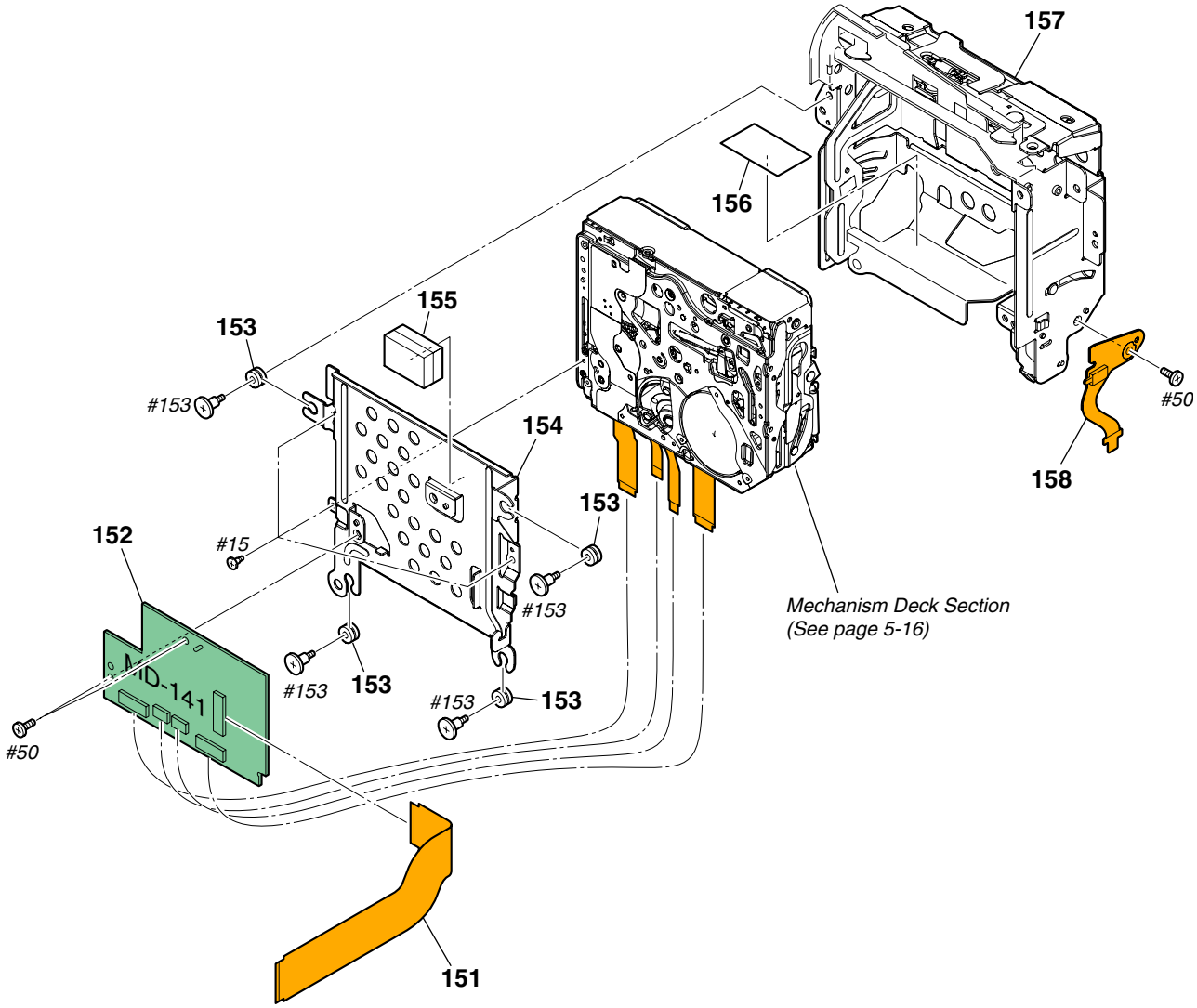


Ref. No.	Part No.	Description
* 101	4-119-384-01	PLATE, CK FIXED
102	A-1599-835-A	CK-204 BOARD, COMPLETE
103	1-836-005-11	FLEXIBLE FLAT CABLE (FFC-171)
104	1-480-866-11	SWITCH BLOCK, CONTROL (CF24000)
105	1-480-867-11	SWITCH BLOCK, CONTROL (KP24000)
106	1-480-864-11	SWITCH BLOCK, CONTROL (AU93000)
107	X-2320-889-1	CABINET (R (93000)) ASSY

Ref. No.	Part No.	Description
108	2-178-805-01	FOOT, RUBBER
109	4-119-851-01	LID (93000), AL
* 110	4-119-404-01	SHAFT, AL
* 111	4-119-383-01	PLATE, CABINET (R) FIXED
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#121	3-080-205-11	SCREW, TAPPING, P2 (Silver)

5-1-4. MD SECTION

DISASSEMBLY HARDWARE LIST

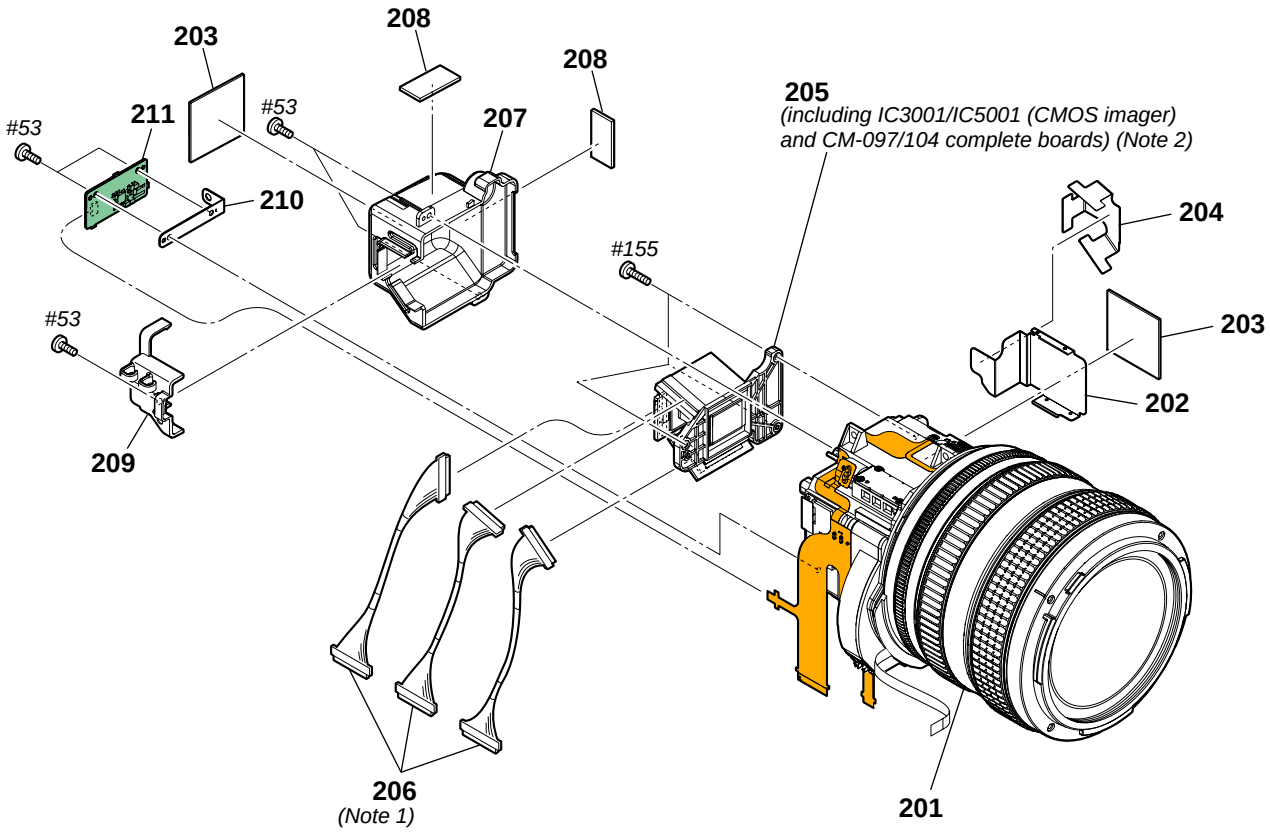


Ref. No.	Part No.	Description
151	1-876-954-11	FP-983 FLEXIBLE BOARD
152	A-1616-572-A	MD-141 BOARD, COMPLETE
153	3-059-809-01	DAMPER, MD
154	X-2320-872-1	FRAME ASSY, MD
* 155	2-673-770-01	GASKET (D)

Ref. No.	Part No.	Description
* 156	4-121-964-01	SHEET, MD INSULATING
157	X-2320-867-1	FRAME ASSY, CS
158	A-1599-833-A	FP-969 FLEXIBLE BOARD, COMPLETE
#15	3-062-214-01	SCREW (M1.4X1.5)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#153	3-059-718-01	SCREW (M1.4X1.5) (Silver)

5-1-5. LENS SECTION

HARDWARE LIST



Note 1: ハーネス（同軸ケーブル）の交換時は2-1ページの“ Note for disconnecting the harness (coaxial cable) ”を参照してください。

Note 1: Refer to page 2-1 “Note for disconnecting the harness (coaxial cable)” when changing the harness (coaxial cable).

Note 2: イメージャの交換時は4-4ページの“ イメージャ交換時の注意 ”を必ずお読みください。

Note 2: Be sure to read “Precuations for Replacement of Imager” on page 4-3 when changing the imager.

Ref. No.	Part No.	Description
201	1-788-775-11	LENS, VIDEO CF002
* 202	4-119-361-01	HEAT SINK, LENS
203	4-119-362-01	SHEET (2828), LENS RADIATION
* 204	4-119-360-01	SHEET, CM RADIATION
205	A-1566-526-A	DEVICE (SERVICE), PRISM (including IC3001/IC5001 (CMOS imager) and CM-097/104 complete boards) (Note 2)
206	1-966-281-11	HARNESS (COAXIAL CABLE) (Note 1)

Ref. No.	Part No.	Description
* 207	4-119-357-01	COVER (A), LIGHT INTERCEPTION
208	4-119-356-01	SHEET (1122), LENS RADIATION
* 209	4-119-358-01	COVER (B), LIGHT INTERCEPTION
* 210	4-119-359-01	PLATE, GY GROUND
211	A-1602-003-A	GY-014 BOARD, COMPLETE (SERVICE)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#155	3-080-204-31	SCREW, TAPPING, P2 (Black)

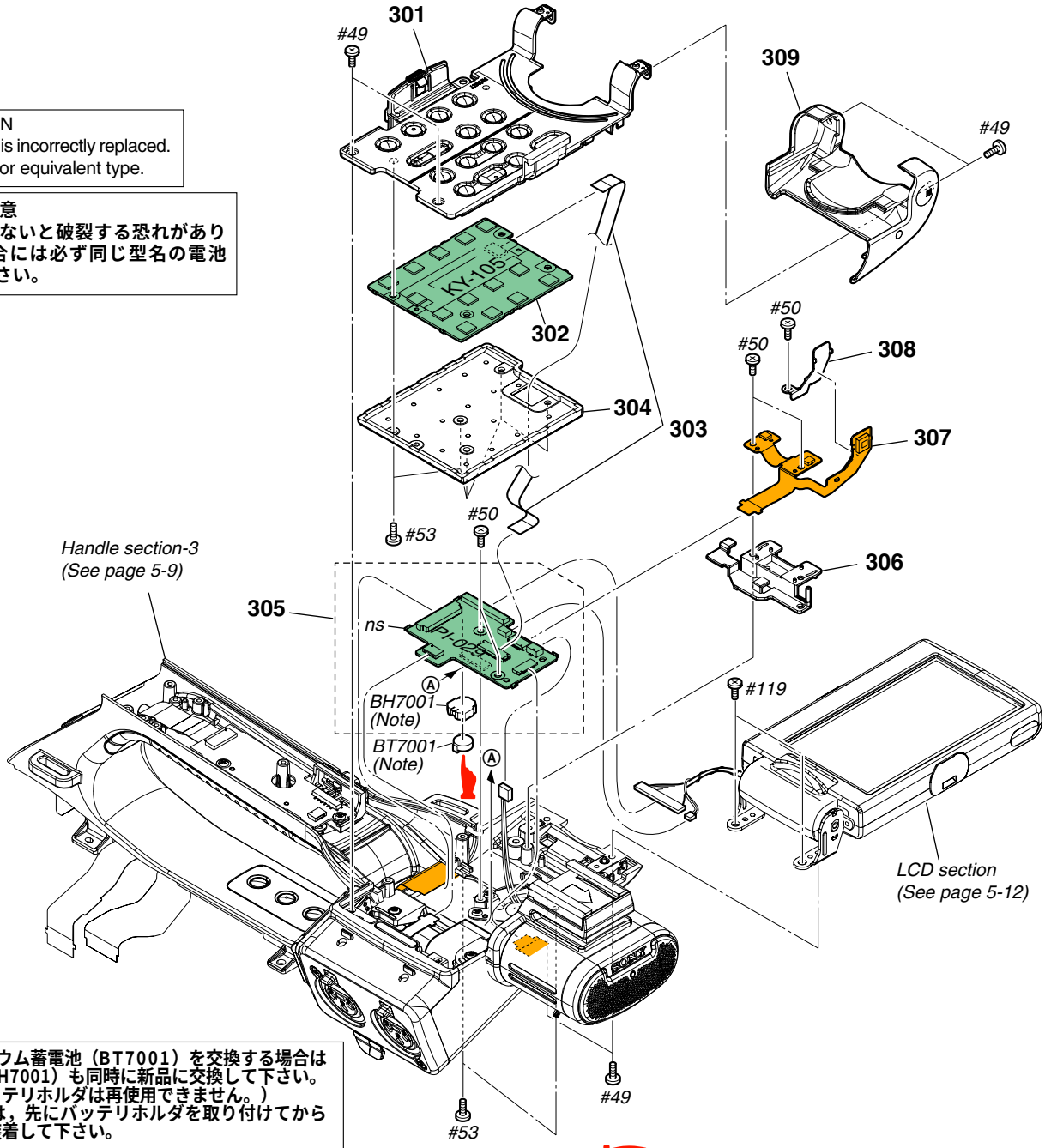
5-1-7. HANDLE SECTION-2

ns: not supplied

DISASSEMBLY HARDWARE LIST

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。



: BT7001 (LITHIUM STORAGE BATTERY) Board on the mount position. (See page 4-64.)

ノート: PI-029基板のリチウム蓄電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換して下さい。（一度使用したバッテリホルダは再使用できません。）部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム蓄電池を装着して下さい。

Note : Replace the battery holder (BH7001) together when replacing the lithium storage battery (BT7001) on the PI-029 board. (The battery holder removed once cannot be used again.) When mounting these parts, mount new battery holder first and attach new lithium storage battery next.

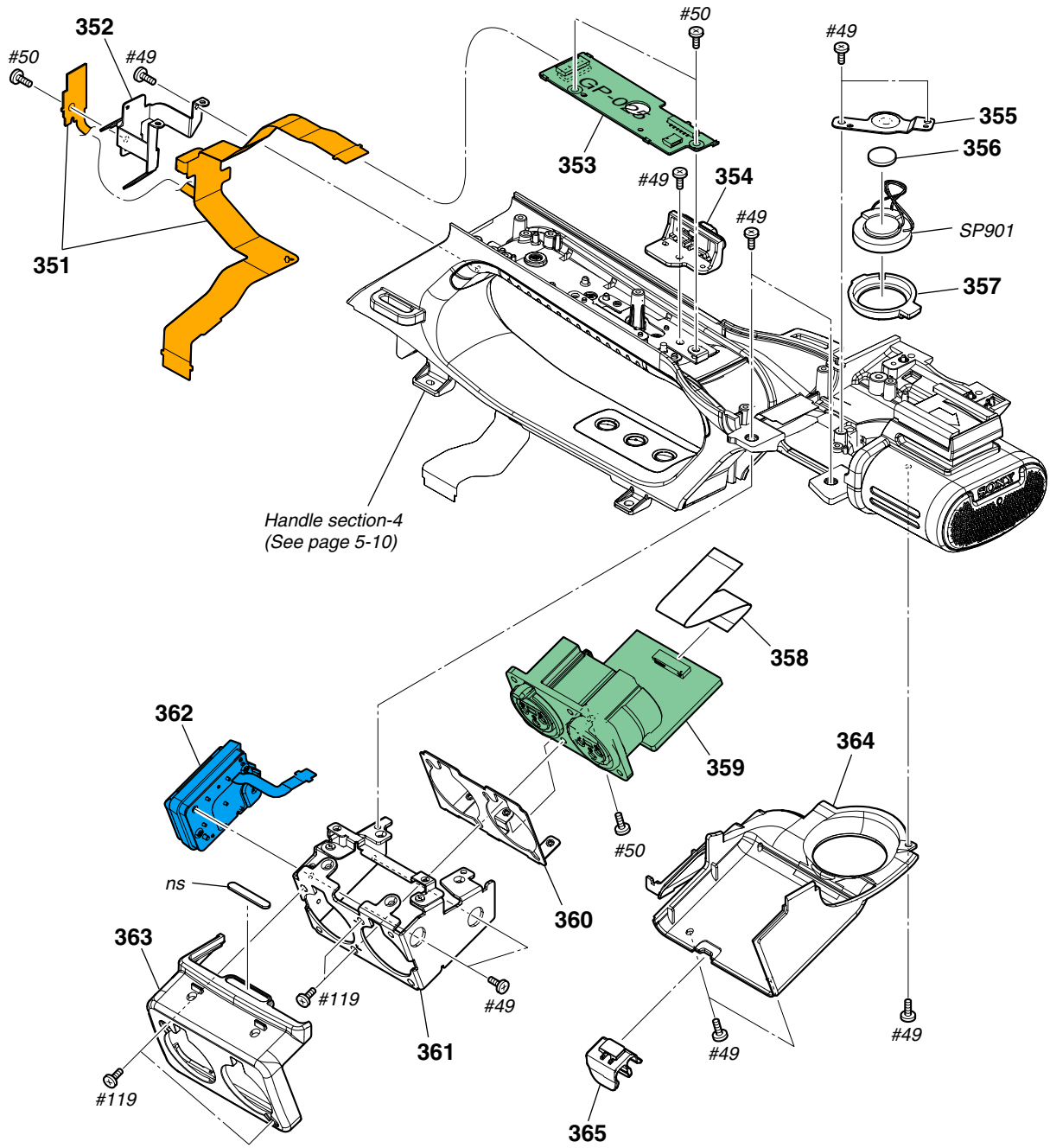
• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description
301	X-2188-605-1	PANEL ASSY, CONTROL
302	A-1599-625-A	KY-105 BOARD, COMPLETE
303	1-836-004-11	FLEXIBLE FLAT CABLE (FFC-170)
* 304	3-288-540-01	COVER (BB)
305	A-1616-348-A	PI-029 BOARD, COMPLETE
306	4-119-279-01	HOLDER, FLEXIBLE
307	A-1599-641-A	FP-966 FLEXIBLE BOARD, COMPLETE
308	X-2188-609-1	FIXED (759) ASSY
309	X-2320-881-1	COVER (93000) ASSY, (FRONT)
⚠*BH7001	1-756-615-51	HOLDER, BATTERY (Note)
⚠BT7001	1-756-134-12	BATTERY, STORAGE, LITHIUM (Note)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-8. HANDLE SECTION-3

ns: not supplied

DISASSEMBLY HARDWARE LIST



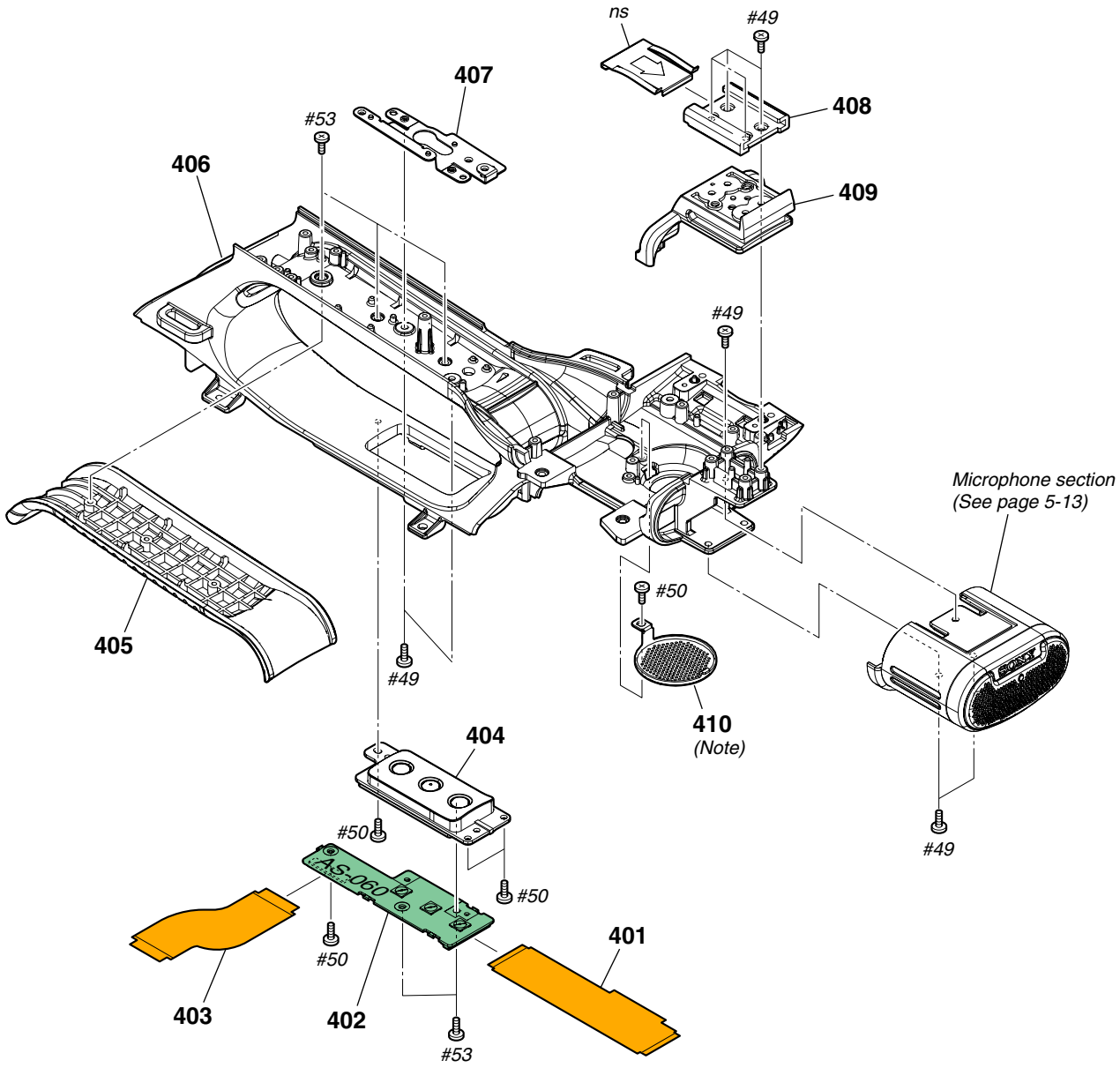
Ref. No.	Part No.	Description
351	A-1599-637-A	FP-967 FLEXIBLE BOARD, COMPLETE
352	4-119-283-01	BRACKET, REAR TALLY
353	A-1599-627-A	GP-025 BOARD, COMPLETE
354	X-2188-599-1	KNOB ASSY, ZOOM SELECTION
* 355	4-119-284-01	RETAINER, SPEAKER
* 356	4-119-285-01	CUSHION, SPEAKER
357	2-178-550-01	HOLDER, SPEAKER
358	1-836-005-11	FLEXIBLE FLAT CABLE (FFC-171)
359	A-1599-620-A	XL-010 BOARD, COMPLETE
* 360	3-877-532-01	BRACKET, XL

Ref. No.	Part No.	Description
361	X-2320-879-1	FRAME ASSY, XLR
362	1-480-870-11	SWITCH BLOCK, CONTROL (XS93000)
363	4-119-812-01	COVER, XLR
364	4-119-811-01	CABINET (93000), HANDLE (FRONT)
365	2-892-095-01	CLAMP, CABLE
SP901	1-825-968-11	LOUDSPEAKER (1.8CM)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-9. HANDLE SECTION-4

ns: not supplied

DISASSEMBLY HARDWARE LIST



Note: スピーカグリル取付時は「HELP10」を必ずお読みください。

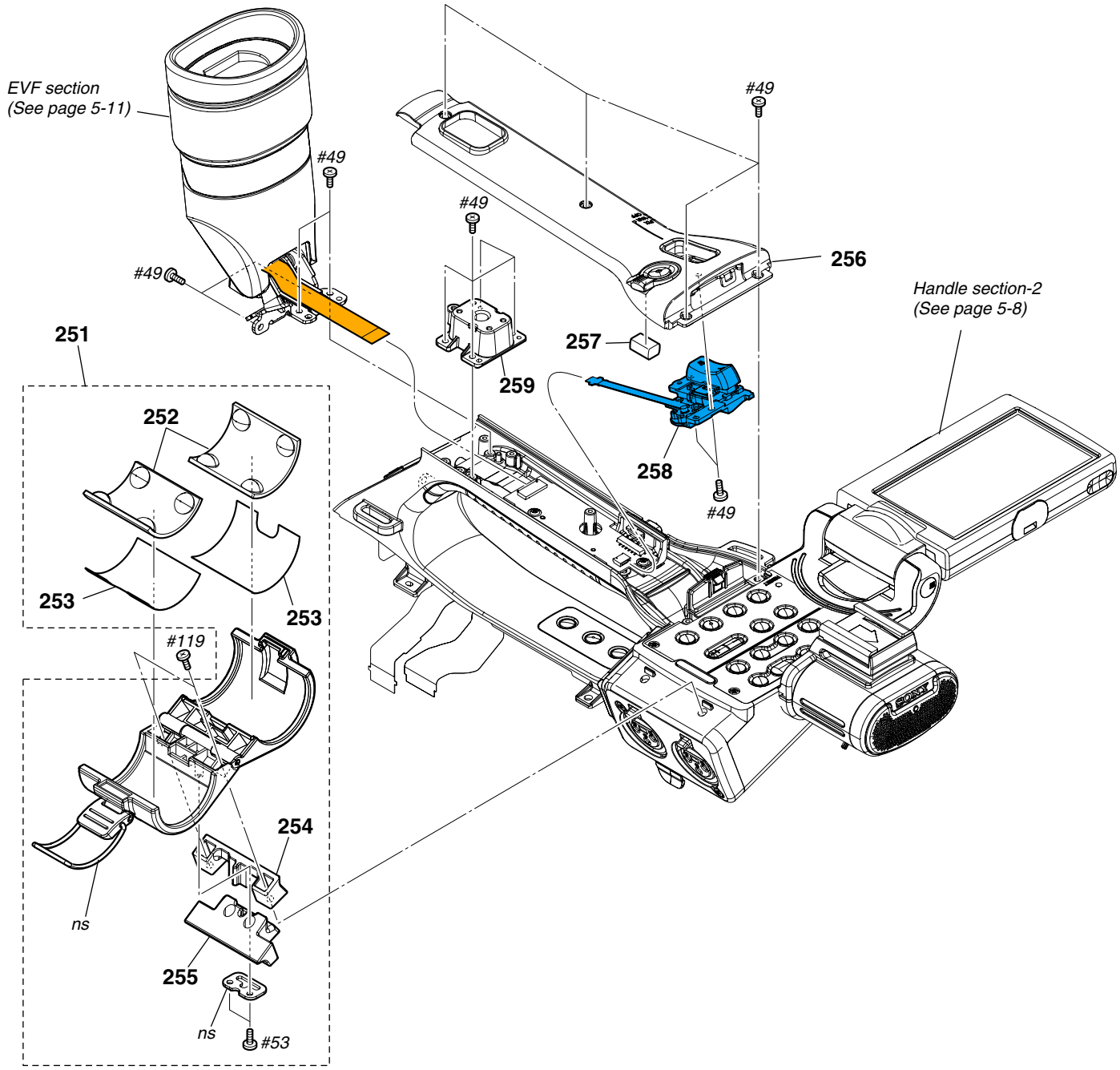
Note: Be sure to read “HELP10” when you install the speaker grille.

Ref. No.	Part No.	Description
401	1-876-953-11	FP-982 FLEXIBLE BOARD
402	A-1599-643-A	AS-060 BOARD, COMPLETE
403	1-876-952-11	FP-981 FLEXIBLE BOARD
404	X-2320-883-1	CABINET (93000) ASSY, ASSIGN
405	4-119-277-01	GRIP
406	4-119-276-11	HANDLE
407	4-119-282-01	BRACKET, GP
408	3-069-286-03	SHOE, ACCESSORY
409	4-119-278-11	CABINET, FRONT SHOE
* 410	2-178-566-01	GRILLE, SPEAKER (Note)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-6. HANDLE SECTION-1

ns: not supplied

DISASSEMBLY HARDWARE LIST

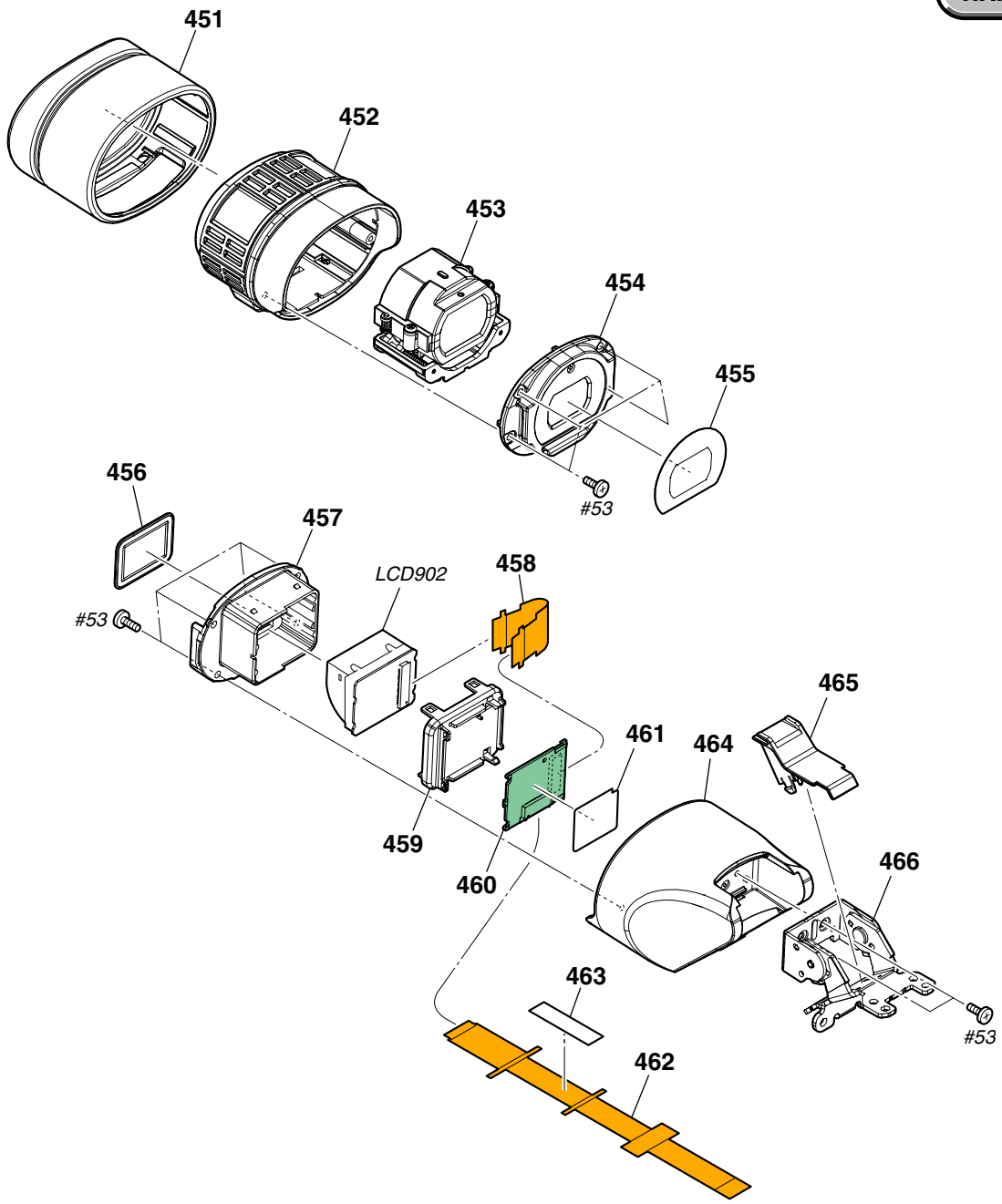


Ref. No.	Part No.	Description
251	X-2187-986-2	HOLDER ASSY, MICROPHONE
252	3-284-080-01	RUBBER, MICROPHONE
253	3-284-081-01	SHEET, RUBBER ADHESIVE
254	3-284-075-02	COVER, MICROPHONE HOLDER RUBBER
255	3-284-074-01	RUBBER, MICROPHONE HOLDER
256	X-2320-880-1	CABINET (93000) ASSY, (UPPER)

Ref. No.	Part No.	Description
* 257	3-700-682-01	CUSHION (MIC)
258	1-480-298-11	SWITCH BLOCK, CONTROL (GZ92000)
259	3-288-538-01	SHOE, REAR (COLD)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-10. EVF SECTION

HARDWARE LIST



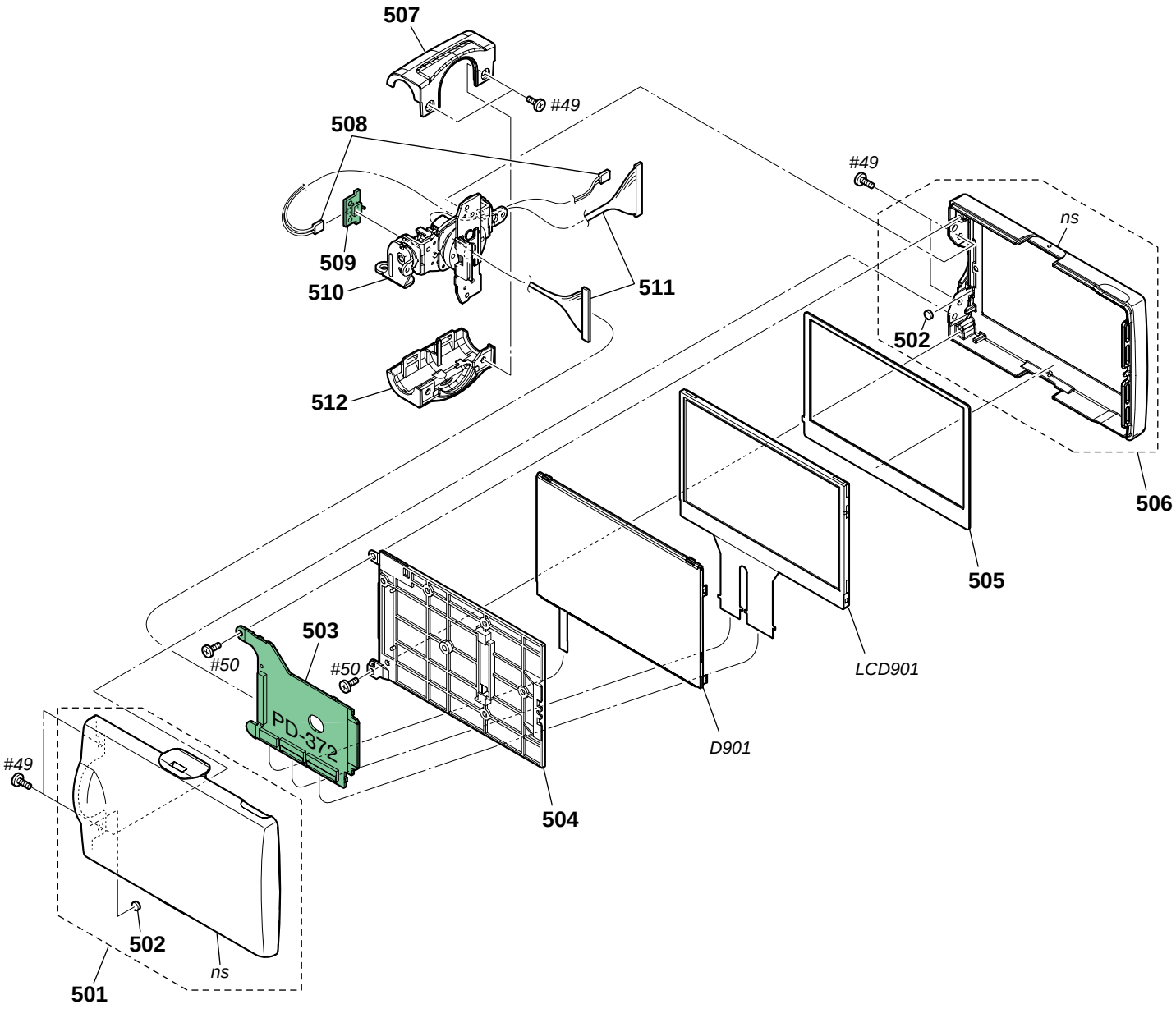
Ref. No.	Part No.	Description
451	4-119-301-01	EYE CUP (SMALL)
452	X-2320-885-1	EYE CUP (93000) ASSY
453	X-2320-861-1	LENS ASSY, VF
454	4-119-302-01	LID, EYE CUP CABINET
455	4-119-303-01	COVER, EYE CUP CABINET LID
456	3-288-591-01	SHEET, VF PROTECTION
457	3-288-585-01	CASE, PANEL
458	1-873-733-11	FP-776 FLEXIBLE BOARD
459	3-288-586-01	LID, PANEL
460	A-1599-826-A	VF-178 BOARD, COMPLETE

Ref. No.	Part No.	Description
* 461	3-299-948-01	SHEET (UU)
462	1-876-945-11	FP-974 FLEXIBLE BOARD
463	3-291-247-02	TAPE (VF)
464	X-2320-886-1	CABINET (93000) ASSY, VF
* 465	3-877-836-01	HOLDE_FPC (VF)
466	X-2320-859-1	HINGE ASSY, VF
LCD902	1-802-560-31	LCD MODULE
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-11. LCD SECTION

ns: not supplied

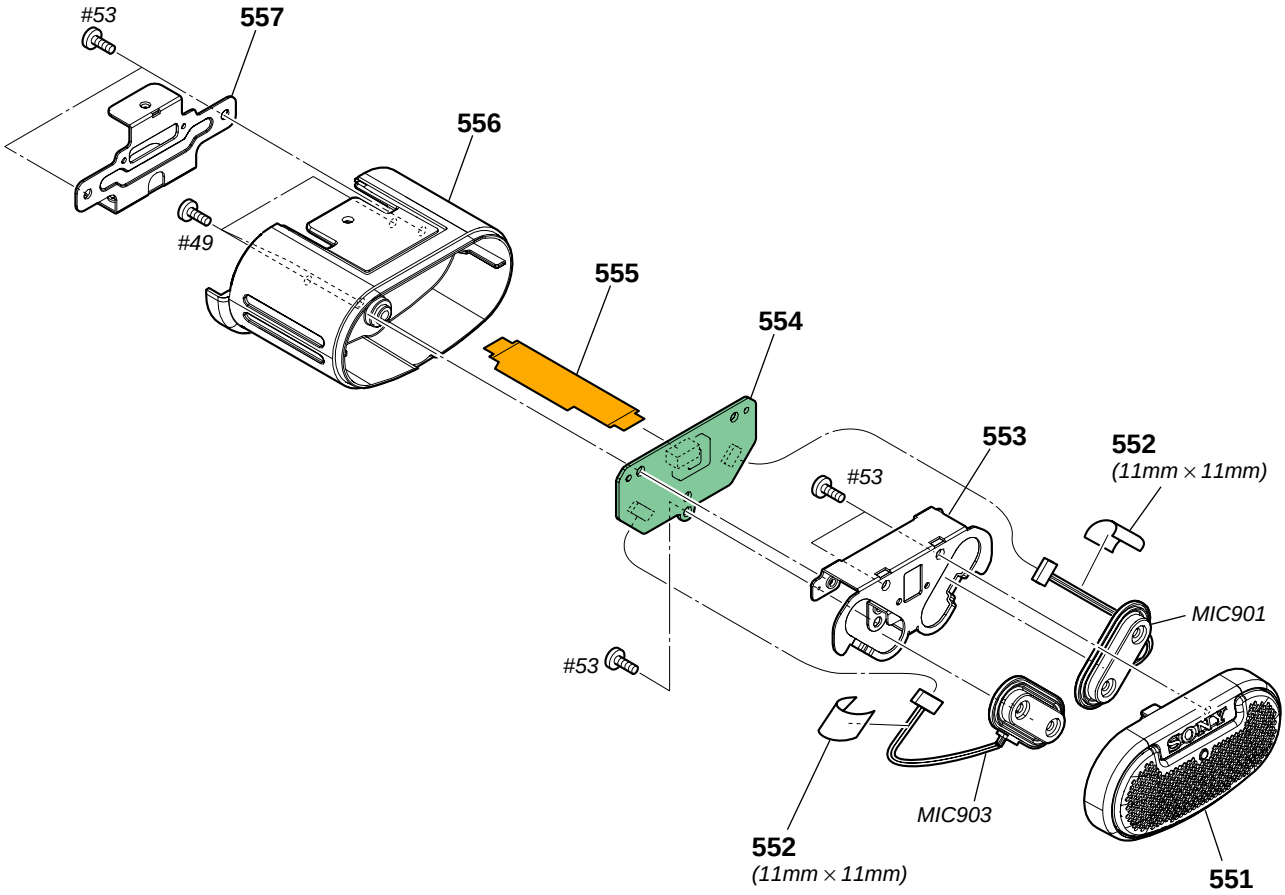
DISASSEMBLY HARDWARE LIST



Ref. No.	Part No.	Description
501	X-2188-612-2	CABINET (UPPER) ASSY, PANEL
502	1-471-278-11	MAGNET
503	A-1599-827-A	PD-372 BOARD, COMPLETE
504	X-2188-611-1	FRAME ASSY, BL
505	3-288-565-11	CUSHION, PANEL
506	X-2188-613-1	CABINET (LOWER) ASSY, PANEL
507	3-288-566-02	CABINET (T), PANEL HINGE
508	1-963-030-21	HARNESS (SW-116)
509	A-1599-828-A	HT-002 BOARD, COMPLETE
510	X-2342-571-1	HINGE (TYPE 07KAI) ASSY, PANEL
511	1-964-790-21	HARNESS (PR-074)
512	3-288-567-02	CABINET (B), PANEL HINGE
D901	1-480-358-11	BLOCK, LIGHT GUIDE PLATE (3.2)
LCD901	1-802-590-11	INDICATOR MODULE, LIQUIDCRYSTAL
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)

5-1-12. MICROPHONE SECTION

HARDWARE LIST



注意： 552 番は，ヒメロン T0.25 (3-076-631-01)を切って使用してください。

CAUTION: For the part of 552, cut NON WOVEN (T0.25) (3-076-631-01) into the desired length and use it.

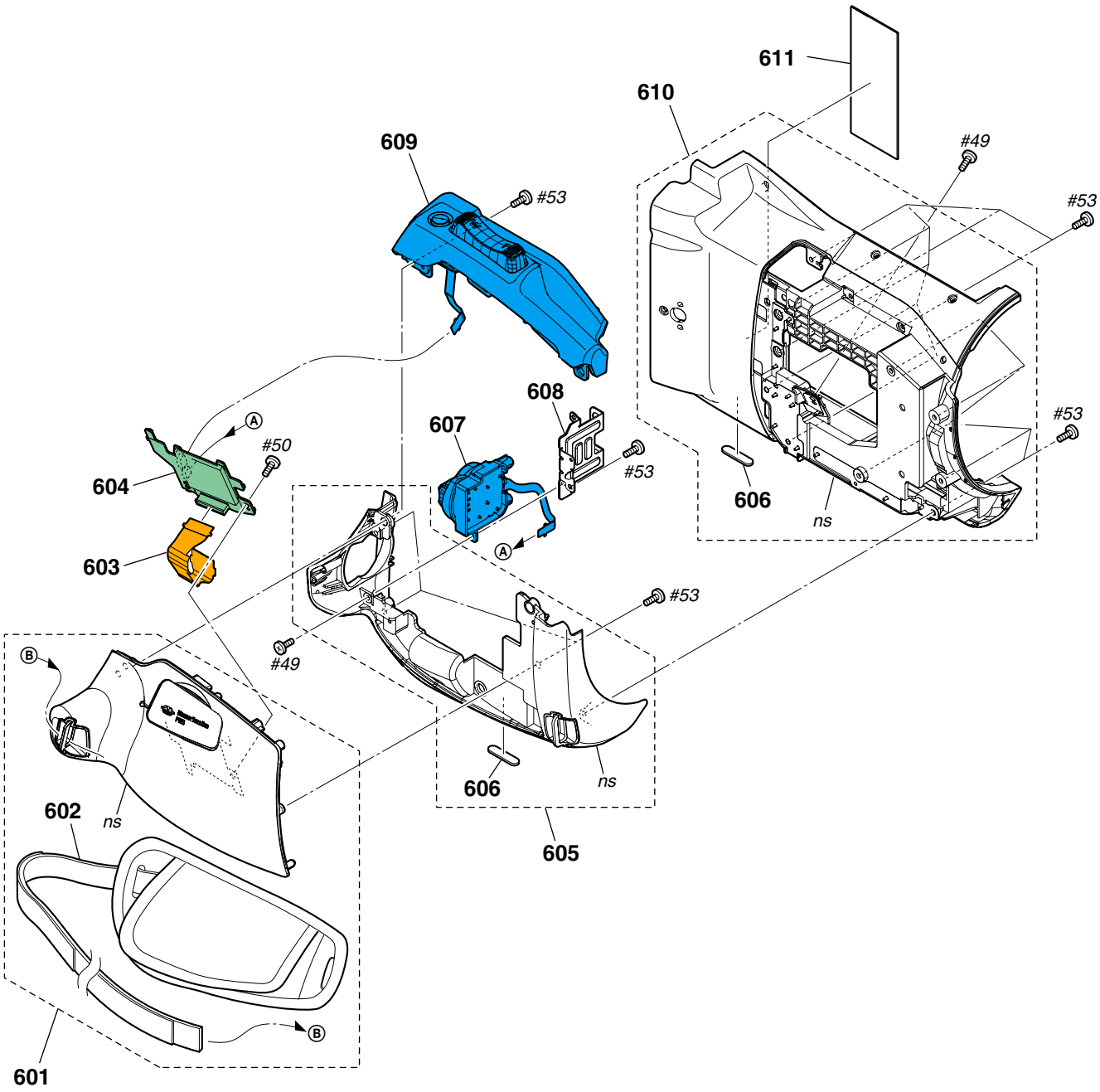
Ref. No.	Part No.	Description
551	X-2320-887-1	GRILLE (93000) ASSY, MICROPHONE
552	CAUTION	TAPE (11x11)
* 553	4-119-326-01	BRACKET (F), MICROPHONE
554	A-1599-610-A	MA-454 BOARD, COMPLETE
555	1-876-946-11	FP-975 FLEXIBLE BOARD
556	4-119-325-11	COVER (M), MICROPHONE

Ref. No.	Part No.	Description
* 557	4-119-330-01	BRACKET (M), MICROPHONE
MIC901	1-542-513-21	MICROPHONE (R ch)
MIC903	1-542-513-21	MICROPHONE (L ch)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5-1-13. CABINET (L) SECTION

ns: not supplied

DISASSEMBLY HARDWARE LIST

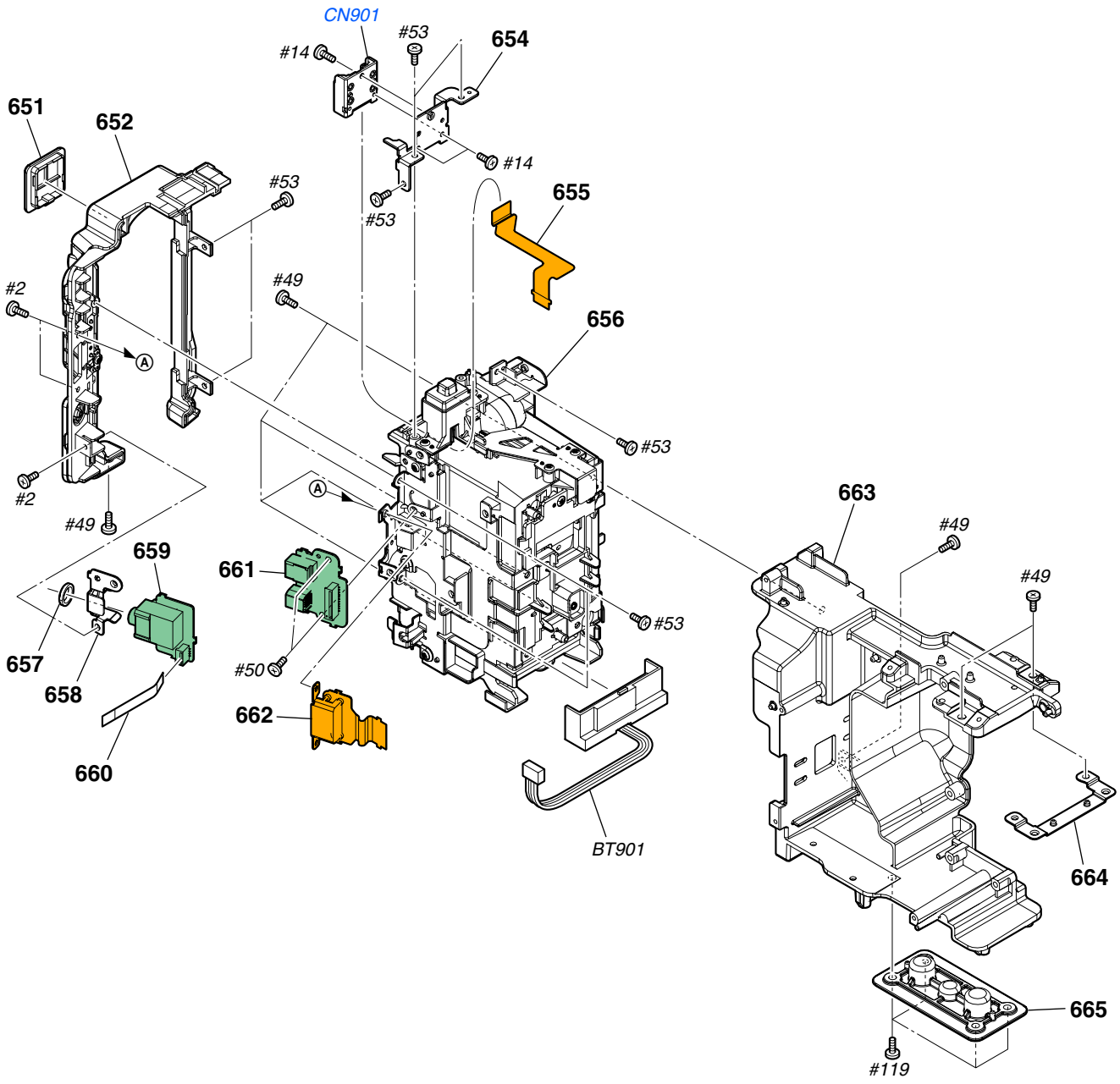


Ref. No.	Part No.	Description
601	X-2342-572-1	CABINET (G (93000)) ASSY
602	2-178-804-01	BELT, GRIP
603	1-876-942-11	FP-971 FLEXIBLE BOARD
604	A-1599-839-A	MS-405 BOARD, COMPLETE
605	X-2320-892-1	CABINET (U (93000)) ASSY
606	2-178-805-01	FOOT, RUBBER
607	1-480-869-11	SWITCH BLOCK, CONTROL (PS24000)
* 608	4-119-422-01	FRAME, PS
609	1-480-868-21	SWITCH BLOCK, CONTROL (PZ93000)
610	X-2320-891-1	CABINET (L (93000)) ASSY
611	4-119-448-02	LABEL, FUSE REPLACEMENT CAUTION
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)

5. REPAIR PARTS LIST

5-1-14. BT PANEL SECTION

HARDWARE LIST

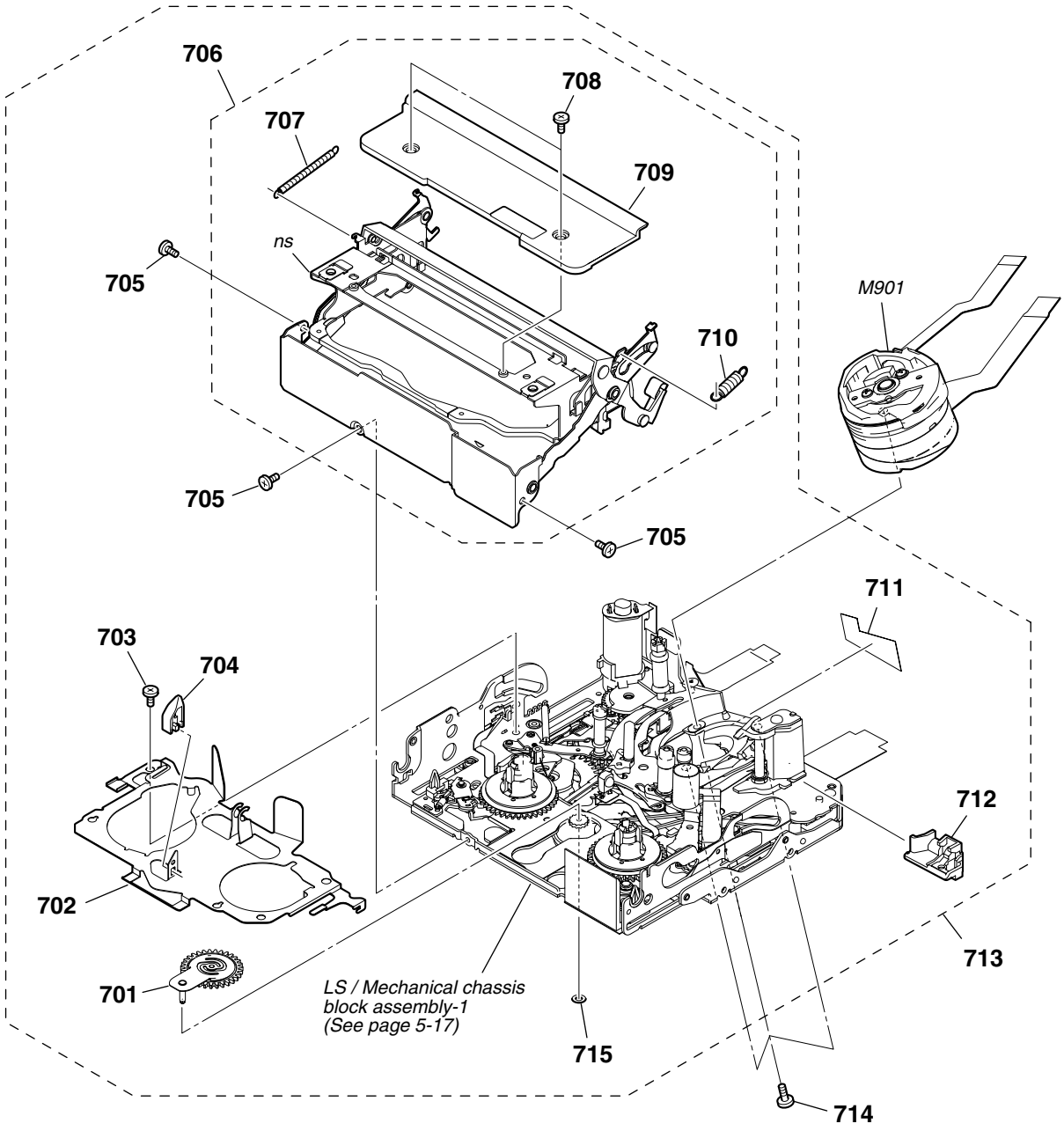


• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description
651	4-119-791-01	COVER, BT SHOE
652	X-2320-876-2	PANEL (93000) ASSY, BT
* 654	4-119-792-01	BRACKET, CF SHOE
655	1-876-943-11	FP-972 FLEXIBLE BOARD
656	X-2320-852-1	HOLDER (24000) ASSY, BT
657	3-061-234-01	NUT (M6X0.5)
658	4-119-251-01	HOLDER, JACK
659	A-1599-843-A	HP-153 BOARD, COMPLETE
660	1-836-003-11	FLEXIBLE FLAT CABLE (FFC-169)
661	A-1599-841-A	JK-376 BOARD, COMPLETE
662	A-1599-844-A	FP-965 FLEXIBLE BOARD, COMPLETE
663	4-119-232-01	CHASSIS, MAIN
664	4-119-237-01	PLATE (F), MC FIXED
665	4-119-234-01	WASHER, TRIPOD
⚠ BT901	1-694-411-31	TERMINAL BOARD, BATTERY
⚠ CN901	1-818-890-21	CONNECTOR, EXTERNAL (HOT SHOE)
#2	2-635-562-31	SCREW (M1.7) (Black)
#14	2-599-475-11	SCREW (M1.7) (Silver)
#49	2-630-005-31	SCREW (M2), NEW TRUSTER, P2 (Black)
#50	2-891-494-11	SCREW (M2), NEW TRUSTER, P2 (Red)
#53	3-080-206-21	SCREW, TAPPING, P2 (Black)
#119	7-627-556-58	SCREW +P 2.6X5 (Black)

5-1-15. MECHANISM DECK SECTION

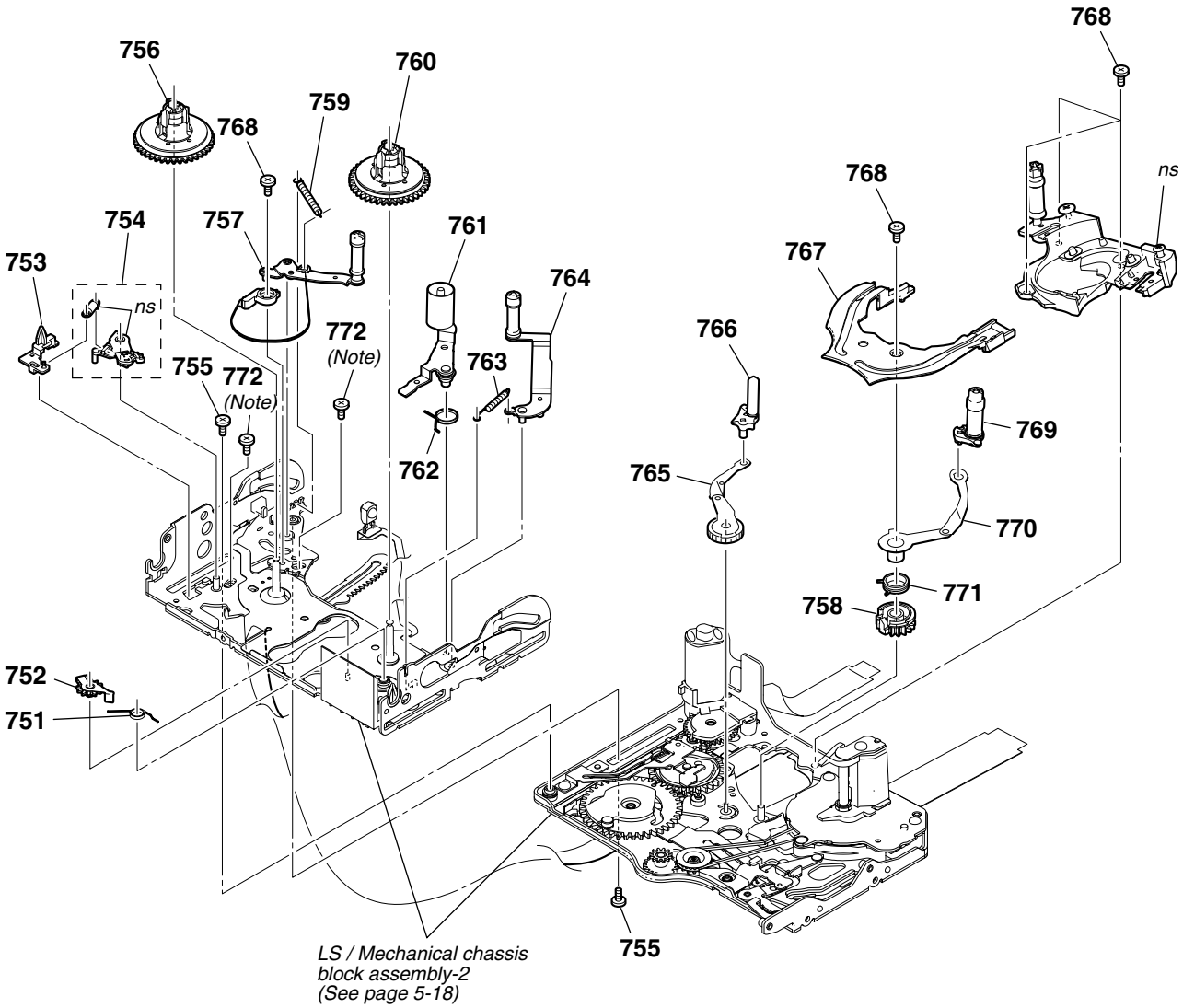
ns: not supplied



Ref. No.	Part No.	Description
701	X-2024-478-1	PENDULUM ASSY
702	2-342-917-02	BASE, LED
703	7-627-850-77	SCREW, PRECISION +P 1.4X1.8
704	3-079-366-11	RELEASE, REEL LOCK
705	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD
706	X-2103-406-3	CASSETTE COMPARTMENT ASSY
707	2-342-926-01	SPRING (ARM S), TENSION COIL
708	2-666-376-11	SCREW (1.4X1.0), POWER LOCK
709	2-342-933-02	PLATE, TOP
710	2-342-927-01	SPRING (ARM T), TENSION COIL
711	2-541-585-01	HEET, FLEXIBLE ADHESIVE
712	2-342-918-01	TG6 CATCHER
713	A-1437-006-A	MD (N220) SUB ASSY (S) A
714	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
715	3-315-414-31	WASHER
M901	A-1128-533-A	DRUM (DEH-33B-R)

5-1-16. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-1

ns: not supplied



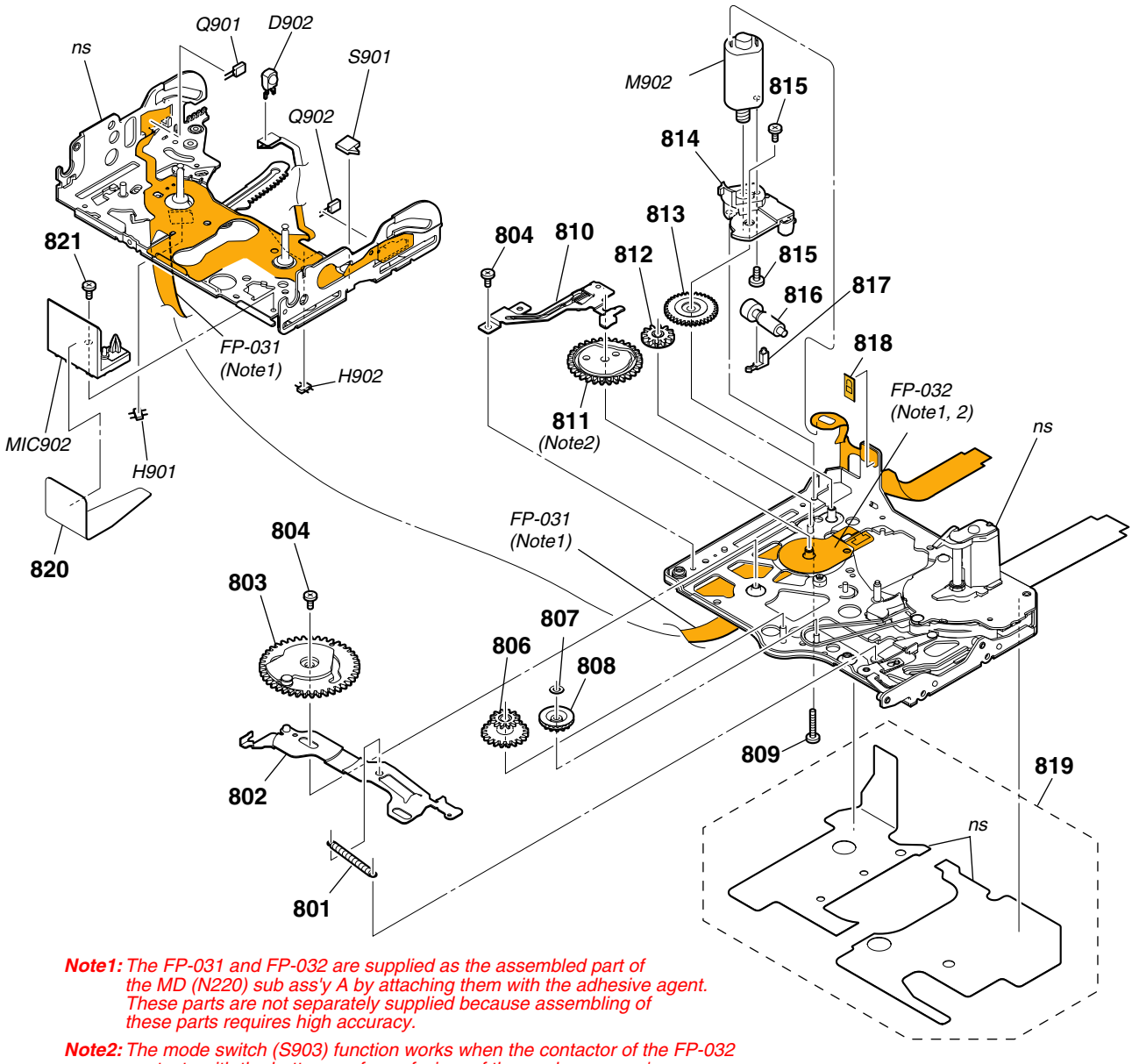
Note: *These two screws are the fixing screws of the LS cam plate.*
These two fixing screws are used for adjusting the LS cam plate position.
(Refer to 4-2. LS cam adjustment of 6-2. MECHANISM SECTION ADJUSTMENTS)

Ref. No.	Part No.	Description
751	2-342-759-01	SPRING, RVS BRAKE
752	A-1083-005-A	BRAKE BLOCK ASSY, RVS
753	2-342-731-01	POSITIONING, S
754	A-1083-006-A	BRAKE BLOCK ASSY, S
755	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
756	X-2067-290-1	TABLE ASSY, S REEL
757	A-1132-279-A	REGULATOR BLOCK ASSY, TENSION
758	2-342-705-01	GEAR (T), GL
759	2-342-902-01	SPRING, TENSION REGULATOR
760	X-2067-291-1	TABLE ASSY, T REEL
761	X-2067-295-1	ARM ASSY, PINCH

Ref. No.	Part No.	Description
762	2-342-906-01	SPRING (PINCH RETURN), TORSION
763	2-342-626-01	SPRING (RETURN TG6), EXTENSION
764	A-1083-002-A	TG6 BLOCK ASSY
765	X-2024-468-1	ARM (S) ASSY, GL
766	X-2024-465-1	COASTER (S) ASSY
767	2-342-612-01	RAIL
768	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
769	X-2024-466-1	COASTER (T) ASSY
770	X-2024-469-1	ARM (T) ASSY, GL
771	2-342-716-01	SPRING (T), TORSION COIL
772	3-703-816-08	SCREW (M1.4X1.4), SPECIAL HEAD (for adjustment) (Note)

5-1-17. LS/MECHANICAL CHASSIS BLOCK ASSEMBLY-2

ns: not supplied



Note1: *The FP-031 and FP-032 are supplied as the assembled part of the MD (N220) sub ass'y A by attaching them with the adhesive agent. These parts are not separately supplied because assembling of these parts requires high accuracy.*

Note2: *The mode switch (S903) function works when the contactor of the FP-032 contacts with the bottom surface of wiper of the mode gear ass'y.*

Ref. No.	Part No.	Description
801	2-342-624-02	SPRING (PINCH LIMITTER), EXTEN
802	X-2024-463-2	SLIDER ASSY, MODE
803	X-2024-462-1	GEAR ASSY, CAM
804	3-075-097-11	SCREW (M1.4X1.4), SPECIAL HEAD
806	2-342-621-01	GEAR, RELAY
807	3-315-414-31	WASHER
808	2-342-620-01	GEAR, CONVERSION
809	3-084-377-01	HEAD (SCREW M1.2)
810	X-2024-460-1	BASE ASSY, CAM
811	X-2024-461-1	GEAR ASSY, MODE (Note 2)
812	2-342-615-01	GEAR, NO.2
813	2-342-691-01	GEAR, NO.1
814	2-637-945-01	HOLDER, MOTOR
815	3-895-822-71	SCREW (M1.2X2), SPECIAL, 0
816	2-342-689-01	SHAFT (2J), WORM
817	2-637-947-01	BASE, MOTOR HOLDER

Ref. No.	Part No.	Description
818	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)
819	2-342-686-01	COVER, CAPSTAN
820	2-541-984-01	COVER, MIC
821	3-703-816-13	SCREW (M1.4X2.0), SPECIAL HEAD
D902	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL SENSOR)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL SENSOR)
M902	X-2024-464-1	MOTOR ASSY (LOADING MOTOR)
MIC902	1-818-576-11	PIN, CONNECTOR (WITH DETECTION) (4PIN CONNECTOR)
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END SENSOR)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP SENSOR)
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description			
	A-1599-643-A	AS-060 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
CN8801	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
CN8802	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
		< RESISTOR >			
R8804	1-218-954-11	METAL CHIP	1.2K	5%	1/16W
R8805	1-218-955-11	METAL CHIP	1.5K	5%	1/16W
		< SWITCH >			
S8801	1-786-157-31	TACTILE SWITCH (4 (ASSIGN))			
S8802	1-786-157-31	TACTILE SWITCH (5 (ASSIGN))			
S8803	1-786-157-31	TACTILE SWITCH (6 (ASSIGN))			
		< VARISTOR >			
* VDR881	1-802-279-11	VARISTOR (SMD)			
	A-1599-835-A	CK-204 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN8001	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P			
CN8002	1-816-655-61	CONNECTOR, FFC/FPC 8P			
* CN8003	1-779-333-51	CONNECTOR, FFC/FPC 18P			
* CN8004	1-779-331-51	CONNECTOR, FFC/FPC 14P			
* CN8005	1-779-327-51	CONNECTOR, FFC/FPC 6P			
		< RESISTOR >			
R8001	1-218-970-11	METAL CHIP	27K	5%	1/16W
R8002	1-218-970-11	METAL CHIP	27K	5%	1/16W
R8003	1-218-970-11	METAL CHIP	27K	5%	1/16W
R8004	1-218-964-11	METAL CHIP	8.2K	5%	1/16W
R8005	1-218-964-11	METAL CHIP	8.2K	5%	1/16W
R8006	1-218-964-11	METAL CHIP	8.2K	5%	1/16W
R8007	1-218-960-11	METAL CHIP	3.9K	5%	1/16W
R8008	1-218-960-11	METAL CHIP	3.9K	5%	1/16W
R8009	1-218-960-11	METAL CHIP	3.9K	5%	1/16W
R8011	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R8012	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R8013	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R8014	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R8015	1-218-955-11	METAL CHIP	1.5K	5%	1/16W
R8016	1-218-955-11	METAL CHIP	1.5K	5%	1/16W
R8018	1-218-955-11	METAL CHIP	1.5K	5%	1/16W
R8019	1-218-954-11	METAL CHIP	1.2K	5%	1/16W
R8020	1-218-954-11	METAL CHIP	1.2K	5%	1/16W
R8022	1-218-954-11	METAL CHIP	1.2K	5%	1/16W
R8029	1-218-960-11	METAL CHIP	3.9K	5%	1/16W
R8030	1-218-964-11	METAL CHIP	8.2K	5%	1/16W
R8031	1-218-970-11	METAL CHIP	27K	5%	1/16W

Ref. No.	Part No.	Description
	A-1566-526-A	DEVICE (SERVICE), PRISM (Note)
	(Not supplied)	CM-097 BOARD, COMPLETE
		**********

(CM-097 complete board and all mounted parts (including IC3001 (CMOS IMAGER)) are not supplied, but they are included in PRISM DEVICE (SERVICE).)

	A-1566-526-A	DEVICE (SERVICE), PRISM (Note)
	(Not supplied)	CM-104 BOARD, COMPLETE
		**********

(CM-104 complete board and all mounted parts (including IC5001 (CMOS IMAGER)) are not supplied, but they are included in PRISM DEVICE (SERVICE).)

	(Not supplied)	FP-031 FLEXIBLE BOARD
		**********

(This flexible board is included in MD (N220) sub assy (S) A (A-1437-006-A).)

		< DIODE >
D902	6-500-652-01	DIODE GL453SE0000F (TAPE LED)
		< HOLE ELEMENT >
H901	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (S REEL SENSOR)
H902	8-719-067-74	ELEMENT, HOLE HW-105A-CDE-T (T REEL SENSOR)
		< CONNECTOR >
MIC902	1-818-576-11	PIN, CONNECTOR (WITH DETECTION) (4 PIN CONNECTOR)
		< TRANSISTOR >
Q901	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE END SENSOR)
Q902	6-550-672-01	TRANSISTOR PT4850FJE00F (TAPE TOP SENSOR)
		< SWITCH >
S901	1-786-448-22	SWITCH, PUSH (1 KEY) (CC DOWN)

	(Not supplied)	FP-032 FLEXIBLE BOARD
		**********

(This flexible board with S903 is included in MD (N220) sub assy (S) A (A-1437-006-A).)

Note: Be sure to read “Precuations for Replacement of Imager” on page 4-3 when changing the imager.

Note: **イメージャの交換時は4-4ページの “ イメージャ交換時の注意 ” を必ずお読みください。**

Ref. No.	Part No.	Description			
	1-677-049-11	FP-228 FLEXIBLE BOARD (DEW SENSOR)			
		**********			
(This flexible board is included in MD (N220) sub assy (S) A (A-1437-006-A).)					
	1-873-733-11	FP-776 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-776 flexible board.)					
	A-1599-844-A	FP-965 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN001	1-819-696-21	CONNECTOR, HDMI (HDMI OUT)			
	A-1599-641-A	FP-966 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C401	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< IC >			
IC401	6-600-163-01	IC RS-770			
IC402	6-600-513-11	IC TK60019CS8G0L			
IC403	6-600-513-11	IC TK60019CS8G0L			
		< RESISTOR >			
R401	1-216-805-11	METAL CHIP	47	5%	1/10W
	A-1599-637-A	FP-967 FLEXIBLE BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
		< DIODE >			
D201	8-719-064-07	DIODE SML-310LTT86 (REC LAMP (BACK))			
		< IC >			
IC201	6-600-163-01	IC RS-770			
		< RESISTOR >			
R201	1-216-815-11	METAL CHIP	330	5%	1/10W
R202	1-216-805-11	METAL CHIP	47	5%	1/10W
		< TEST PIN >			
TP201	1-535-757-11	CHIP, CHECKER			

Ref. No.	Part No.	Description			
	A-1599-833-A	FP-969 FLEXIBLE BOARD, COMPLETE			
		**********			
		< SWITCH >			
* S101	1-798-076-21	PUSHBUTTON SWITCH (EJECT)			
	1-876-942-11	FP-971 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-971 flexible board.)					
	1-876-943-11	FP-972 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-972 flexible board.)					
	1-876-944-11	FP-973 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-973 flexible board.)					
	1-876-945-11	FP-974 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-974 flexible board.)					
	1-876-946-11	FP-975 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-975 flexible board.)					
	1-876-952-11	FP-981 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-981 flexible board.)					
	1-876-953-11	FP-982 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-982 flexible board.)					
	1-876-954-11	FP-983 FLEXIBLE BOARD			
		**********			
(There isn't mounted electrical parts in FP-983 flexible board.)					
	A-1599-627-A	GP-025 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C7811	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
		< CONNECTOR >			
* CN7801	1-817-564-71	CONNECTOR, FPC (ZIF) 33P			
CN7802	1-816-654-61	FFC/FPC CONNECTOR (LIF) 6P			
* CN7803	1-817-543-71	CONNECTOR, FPC (ZIF) 27P			
		< RESISTOR >			
R7801	1-218-970-11	METAL CHIP	27K	5%	1/16W
R7802	1-218-964-11	METAL CHIP	8.2K	5%	1/16W
R7803	1-218-960-11	METAL CHIP	3.9K	5%	1/16W
R7804	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R7805	1-218-955-11	METAL CHIP	1.5K	5%	1/16W

Ref. No.	Part No.	Description			
R7806	1-218-954-11	METAL CHIP	1.2K	5%	1/16W
R7812	1-216-864-11	SHORT CHIP	0		
		< SWITCH >			
S7801	1-771-487-11	SWITCH, SLIDE (HANDLE ZOOM)			
	A-1602-003-A	GY-014 BOARD, COMPLETE (SERVICE)			
		**********			
		< CAPACITOR >			
C8501	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8502	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C8503	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C8504	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8505	1-114-411-21	CAP, CERAMIC	0.33uF	10%	6.3V
C8506	1-114-411-21	CAP, CERAMIC	0.33uF	10%	6.3V
C8507	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8508	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8509	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C8510	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C8511	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C8512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8513	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C8514	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8515	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8516	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8517	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8518	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8519	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8520	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8521	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8522	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
		< CONNECTOR >			
CN8501	1-816-655-61	CONNECTOR, FFC/FPC 8P			
		< IC >			
* IC8501	8-753-284-38	IC CXA3739AER-T2			
		< RESISTOR >			
R8509	1-218-989-11	RES, CHIP	1M	5%	1/16W
R8510	1-218-989-11	RES, CHIP	1M	5%	1/16W
R8511	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8512	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8513	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R8514	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R8515	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8516	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8517	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8518	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8529	1-218-990-81	SHORT CHIP	0		
R8530	1-218-990-81	SHORT CHIP	0		
		< SENSOR >			
* SE8501	1-480-218-11	SENSOR, ANGULAR VELOCITY (31.2kHz) (PITCH SENSOR)			
* SE8502	1-479-022-61	SENSOR, ANGULAR VELOCITY (32.2kHz) (YAW SENSOR)			
	A-1599-843-A	HP-153 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C9202	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9203	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C9204	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C9205	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
		< CONNECTOR >			
CN9201	1-779-328-51	CONNECTOR, FFC/FPC 8P			
		< DIODE >			
D9201	6-501-257-01	DIODE CL-197TLY-CD-T			
		< FERRITE BEAD >			
FB9202	1-400-927-31	BEAD, FERRITE (1005)			
FB9203	1-400-927-31	BEAD, FERRITE (1005)			
		< JACK >			
J9201	1-794-525-12	JACK, MIC (HEADPHONE)			
		< COIL >			
L9201	1-400-922-11	INDUCTOR	220uH		
L9202	1-400-922-11	INDUCTOR	220uH		
	A-1599-828-A	HT-002 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
CN7401	1-794-375-21	PIN, CONNECTOR 2P			
		< SWITCH >			
S7401	1-786-180-11	SWITCH, PUSH (1KEY) (PANEL REVERSE)			
	A-1599-841-A	JK-376 BOARD, COMPLETE			
		**********			
		< CONNECTOR >			
* CN9507	1-779-335-51	CONNECTOR, FFC/FPC 22P			
CN9508	1-815-794-13	CONNECTOR (MULTIPLE) (A/V R)			
* CN9509	1-794-276-21	CONNECTOR, SQUARE TYPE 4P (HDV/DV)			
		< FERRITE BEAD >			
FB9501	1-400-927-31	BEAD, FERRITE (1005)			
FB9502	1-400-927-31	BEAD, FERRITE (1005)			
		< COMPOSITION CIRCUIT BLOCK >			
RB9501	1-234-400-21	CONDUCTOR, NETWORK (1005X4)			

Ref. No.	Part No.	Description
		< THERMISTOR >
TH9501	1-805-726-11	THERMISTOR, POSITIVE
TH9502	1-805-726-11	THERMISTOR, POSITIVE
TH9503	1-805-726-11	THERMISTOR, POSITIVE
TH9504	1-805-726-11	THERMISTOR, POSITIVE
		< VARISTOR >
* VD9501	1-802-279-11	VARISTOR (SMD)
* VD9502	1-802-279-11	VARISTOR (SMD)
* VD9504	1-802-279-11	VARISTOR (SMD)
	A-1599-625-A	KY-105 BOARD, COMPLETE
		**********
		< CONNECTOR >
CN7201	1-816-645-61	FFC/FPC CONNECTOR (LIF) 14P
		< RESISTOR >
R7201	1-218-990-81	SHORT CHIP 0
R7202	1-218-954-11	METAL CHIP 1.2K 5% 1/16W
R7204	1-218-955-11	METAL CHIP 1.5K 5% 1/16W
R7205	1-218-954-11	METAL CHIP 1.2K 5% 1/16W
R7206	1-218-954-11	METAL CHIP 1.2K 5% 1/16W
R7207	1-218-957-11	METAL CHIP 2.2K 5% 1/16W
R7208	1-218-955-11	METAL CHIP 1.5K 5% 1/16W
R7209	1-218-955-11	METAL CHIP 1.5K 5% 1/16W
R7210	1-218-960-11	METAL CHIP 3.9K 5% 1/16W
R7211	1-218-957-11	METAL CHIP 2.2K 5% 1/16W
R7212	1-218-957-11	METAL CHIP 2.2K 5% 1/16W
R7213	1-218-964-11	METAL CHIP 8.2K 5% 1/16W
R7214	1-218-960-11	METAL CHIP 3.9K 5% 1/16W
R7215	1-218-960-11	METAL CHIP 3.9K 5% 1/16W
R7216	1-218-964-11	METAL CHIP 8.2K 5% 1/16W
R7217	1-218-970-11	METAL CHIP 27K 5% 1/16W
R7218	1-218-970-11	METAL CHIP 27K 5% 1/16W
R7219	1-218-964-11	METAL CHIP 8.2K 5% 1/16W
		< SWITCH >
S7201	1-786-157-31	TACTILE SWITCH (STOP)
S7202	1-786-157-31	TACTILE SWITCH (PLAY)
S7203	1-786-157-31	TACTILE SWITCH (+ (VOLUME/MEMORY))
S7204	1-786-157-31	TACTILE SWITCH (REW)
S7205	1-786-157-31	TACTILE SWITCH (INDEX)
S7206	1-786-157-31	TACTILE SWITCH (DISPLAY/BATT INFO)
S7207	1-786-157-31	TACTILE SWITCH (RESET)
S7208	1-786-157-31	TACTILE SWITCH (- (VOLUME/MEMORY))
S7209	1-786-157-31	TACTILE SWITCH (REC 1)
S7210	1-786-157-31	TACTILE SWITCH (DELETE)
S7211	1-786-157-31	TACTILE SWITCH (REC 2)
S7212	1-786-157-31	TACTILE SWITCH (DATA CODE)
S7213	1-786-157-31	TACTILE SWITCH (PAUSE)
S7214	1-786-157-31	TACTILE SWITCH (PLAY)
S7215	1-786-157-31	TACTILE SWITCH (TC/U-BIT)
S7216	1-786-157-31	TACTILE SWITCH (FF)
S7217	1-786-157-31	TACTILE SWITCH (SLOW)

Ref. No.	Part No.	Description
		< VARISTOR >
* VDR721	1-802-279-11	VARISTOR (SMD)
* VDR722	1-802-279-11	VARISTOR (SMD)
* VDR723	1-802-279-11	VARISTOR (SMD)
* VDR724	1-802-279-11	VARISTOR (SMD)
* VDR725	1-802-279-11	VARISTOR (SMD)
	A-1599-610-A	MA-454 BOARD, COMPLETE
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		< CAPACITOR >
C8301	1-164-874-11	CERAMIC CHIP 100PF 5% 50V
C8302	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8303	1-164-874-11	CERAMIC CHIP 100PF 5% 50V
C8304	1-164-874-11	CERAMIC CHIP 100PF 5% 50V
C8305	1-164-874-11	CERAMIC CHIP 100PF 5% 50V
C8306	1-100-966-91	CERAMIC CHIP 10uF 20% 10V
C8307	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8308	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8309	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8310	1-100-567-81	CERAMIC CHIP 0.01uF 10% 25V
C8311	1-100-567-81	CERAMIC CHIP 0.01uF 10% 25V
C8312	1-164-882-11	CERAMIC CHIP 220PF 5% 16V
C8313	1-164-882-11	CERAMIC CHIP 220PF 5% 16V
C8314	1-100-567-81	CERAMIC CHIP 0.01uF 10% 25V
C8315	1-164-882-11	CERAMIC CHIP 220PF 5% 16V
C8316	1-164-882-11	CERAMIC CHIP 220PF 5% 16V
C8317	1-100-567-81	CERAMIC CHIP 0.01uF 10% 25V
C8320	1-100-611-91	CERAMIC CHIP 22uF 20% 6.3V
C8321	1-100-611-91	CERAMIC CHIP 22uF 20% 6.3V
C8322	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C8323	1-125-777-11	CERAMIC CHIP 0.1uF 10% 10V
C8324	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8325	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8326	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
C8327	1-165-908-11	CERAMIC CHIP 1uF 10% 10V
		< CONNECTOR >
CN8301	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P
CN8302	1-778-507-21	PIN, CONNECTOR (PC BOARD) 4P
* CN8303	1-819-873-61	CONNECTOR, FPC (ZIF) 21P
		< DIODE >
D8301	8-719-064-07	DIODE SML-310LTT86 (REC LAMP (FRONT))
		< IC >
IC8301	6-707-702-01	IC NJM2746RB1 (TE2)
IC8302	6-707-702-01	IC NJM2746RB1 (TE2)
IC8303	6-707-702-01	IC NJM2746RB1 (TE2)
IC8304	6-707-702-01	IC NJM2746RB1 (TE2)
		< COIL >
L8301	1-469-555-21	INDUCTOR 10uH
		< RESISTOR >
R8301	1-208-691-11	METAL CHIP 2.2K 0.50% 1/16W

Ref. No.	Part No.	Description			
R8302	1-208-691-11	METAL CHIP	2.2K	0.50%	1/16W
R8303	1-208-691-11	METAL CHIP	2.2K	0.50%	1/16W
R8304	1-208-691-11	METAL CHIP	2.2K	0.50%	1/16W
R8305	1-219-604-11	METAL CHIP	82K	0.50%	1/16W
R8306	1-208-719-11	METAL CHIP	33K	0.50%	1/16W
R8307	1-219-604-11	METAL CHIP	82K	0.50%	1/16W
R8308	1-208-719-11	METAL CHIP	33K	0.50%	1/16W
R8309	1-219-604-11	METAL CHIP	82K	0.50%	1/16W
R8310	1-208-719-11	METAL CHIP	33K	0.50%	1/16W
R8311	1-219-604-11	METAL CHIP	82K	0.50%	1/16W
R8312	1-208-719-11	METAL CHIP	33K	0.50%	1/16W
R8313	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8314	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8315	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8316	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8317	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8318	1-208-707-11	METAL CHIP	10K	0.50%	1/16W
R8319	1-218-978-11	METAL CHIP	120K	5%	1/16W
R8320	1-208-931-11	METAL CHIP	68K	0.50%	1/16W
R8321	1-208-931-11	METAL CHIP	68K	0.50%	1/16W
R8322	1-218-978-11	METAL CHIP	120K	5%	1/16W
R8323	1-216-811-11	METAL CHIP	150	5%	1/10W

	A-1616-572-A	MD-141 BOARD, COMPLETE				
		**********				
		< CAPACITOR >				
	C5028	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
	C5029	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5030	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
	C5031	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5033	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5034	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
	C5035	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
	C5036	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
	C5037	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5038	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
	C5039	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5041	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5042	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
	C5043	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
	C5201	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5202	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
	C5203	1-137-704-91	TANTAL. CHIP	10uF	20%	10V
	C5204	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5206	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
	C5207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5208	1-125-891-11	CERAMIC CHIP	0.47uF	10%	10V
	C5209	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5210	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5213	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
	C5215	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
	C5401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C5402	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C5403	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5404	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5405	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5406	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5407	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5408	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5410	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C5411	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C5412	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5414	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5415	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5418	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5419	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5420	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5421	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C5422	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5423	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5424	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C5425	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5426	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5427	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5428	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5429	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C5430	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C5431	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5432	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5433	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5434	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5435	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5436	1-164-935-11	CERAMIC CHIP	470PF	10%	50V
C5437	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5438	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
C5439	1-164-942-11	CERAMIC CHIP	0.0068uF	10%	16V
		< CONNECTOR >			
CN5001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
* CN5201	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
* CN5401	1-818-818-81	CONNECTOR, FPC (ZIF) 29P			
* CN5402	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
* CN5403	1-817-829-81	CONNECTOR, FPC (ZIF) 27P			
		< DIODE >			
D5002	8-719-073-35	DIODE RB551V-30TE-17			
D5003	8-719-073-35	DIODE RB551V-30TE-17			
		< IC >			
* IC5003	6-713-575-01	IC LV5256GP-TE-L-E			
* IC5004	6-713-575-01	IC LV5256GP-TE-L-E			
IC5201	6-707-432-01	IC TLS26A102PFBR			
IC5401	6-707-428-01	IC BD6639BGLV-E2			
		< COIL >			
L5003	1-456-497-11	INDUCTOR	15uH		

Ref. No.	Part No.	Description			
L5004	1-456-501-11	INDUCTOR	33uH		
L5201	1-400-588-11	INDUCTOR	10uH		
L5202	1-400-588-11	INDUCTOR	10uH		
* L5401	1-400-411-21	INDUCTOR	4.7uH		
L5402	1-469-555-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q5401	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L		
Q5402	6-550-174-01	TRANSISTOR	2SA2030T2L		
Q5403	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
		< RESISTOR >			
R5055	1-218-975-11	METAL CHIP	68K	5%	1/16W
R5060	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5062	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R5063	1-218-975-11	METAL CHIP	68K	5%	1/16W
R5064	1-218-975-11	METAL CHIP	68K	5%	1/16W
R5069	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5071	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R5072	1-218-975-11	METAL CHIP	68K	5%	1/16W
R5077	1-218-969-11	RES, CHIP	22K	5%	1/16W
R5078	1-218-969-11	RES, CHIP	22K	5%	1/16W
R5085	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R5086	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R5201	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5202	1-218-969-11	RES, CHIP	22K	5%	1/16W
R5203	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5204	1-218-963-11	METAL CHIP	6.8K	5%	1/16W
R5205	1-208-715-11	METAL CHIP	22K	0.50%	1/16W
R5206	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5207	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5209	1-208-715-11	METAL CHIP	22K	0.50%	1/16W
* R5210	1-208-869-11	METAL CHIP	180	0.50%	1/16W
* R5211	1-208-869-11	METAL CHIP	180	0.50%	1/16W
* R5212	1-208-869-11	METAL CHIP	180	0.50%	1/16W
* R5213	1-208-869-11	METAL CHIP	180	0.50%	1/16W
R5216	1-218-990-81	SHORT CHIP	0		
R5401	1-218-935-11	METAL CHIP	33	5%	1/16W
R5402	1-218-935-11	METAL CHIP	33	5%	1/16W
R5403	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5404	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5405	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5406	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5407	1-218-941-81	METAL CHIP	100	5%	1/16W
R5408	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5409	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5410	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5411	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R5412	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5413	1-218-946-11	METAL CHIP	270	5%	1/16W
R5414	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5416	1-218-967-11	METAL CHIP	15K	5%	1/16W
R5417	1-218-935-11	METAL CHIP	33	5%	1/16W
R5418	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5419	1-218-965-11	METAL CHIP	10K	5%	1/16W
R5422	1-218-969-11	RES, CHIP	22K	5%	1/16W
R5423	1-218-961-11	METAL CHIP	4.7K	5%	1/16W

Ref. No.	Part No.	Description			
R5424	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
	A-1599-839-A	MS-405 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C8601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
		< CONNECTOR >			
CN8602	1-779-336-51	CONNECTOR, FFC/FPC 24P			
CN8603	1-817-913-41	MEMORY STICK DUO CONNECTOR			
* CN8605	1-779-327-51	CONNECTOR, FFC/FPC 6P			
* CN8606	1-779-329-51	CONNECTOR, FFC/FPC 10P			
		< DIODE >			
D8601	6-501-216-01	DIODE CL-271HR-C-TS (MS ACCESS)			
D8604	8-719-083-91	DIODE EDZ TE61 6.8B			
D8605	8-719-074-67	DIODE EDZ-TE61-5.6B			
		< FERRITE BEAD >			
FB8601	1-500-238-11	BEAD, FERRITE (CHIP) (1608)			
		< IC >			
* IC8601	6-708-445-01	IC R1114Q291D-TR-FA			
		< RESISTOR >			
R8601	1-218-943-11	METAL CHIP	150	5%	1/16W
R8602	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8614	1-216-864-11	SHORT CHIP	0		
		< VARISTOR >			
* VDR007	1-802-279-11	VARISTOR (SMD)			
* VDR009	1-802-279-11	VARISTOR (SMD)			
* VDR010	1-802-279-11	VARISTOR (SMD)			
	A-1599-827-A	PD-372 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C6001	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6002	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6004	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6005	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6006	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6013	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6014	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C6015	1-100-581-81	CERAMIC CHIP	0.0047uF	10%	50V
C6016	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C6017	1-165-908-11	CERAMIC CHIP	1uF	10%	10V

Ref. No.	Part No.	Description			
C6018	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6019	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6020	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6021	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6022	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6023	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6024	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6025	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6027	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C6028	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6029	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6030	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6031	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6032	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6033	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6034	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6035	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6036	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C6037	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6038	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6039	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C6040	1-127-861-11	CERAMIC CHIP	2.2uF	10%	16V
C6041	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6042	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6043	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6044	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C6045	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
		< CONNECTOR >			
CN6001	1-816-928-11	PIN, CONNECTOR 22P			
* CN6002	1-794-322-51	FFC/CONNECTOR, FPC (ZIF) 6P			
* CN6003	1-819-914-71	CONNECTOR, FPC (ZIF) 29P			
* CN6004	1-817-544-71	CONNECTOR, FPC (ZIF) 39P			
		< DIODE >			
D6001	8-719-069-29	DIODE RB520S-30FJTE61			
D6002	8-719-069-29	DIODE RB520S-30FJTE61			
		< FERRITE BEAD >			
FB6001	1-400-331-11	FERRITE, EMI (SMD) (1005)			
		< IC >			
* IC6001	6-712-180-01	IC IR3Y80Y6			
		< COIL >			
L6001	1-400-588-11	INDUCTOR	10uH		
L6002	1-400-588-11	INDUCTOR	10uH		
L6003	1-400-588-11	INDUCTOR	10uH		
L6004	1-400-588-11	INDUCTOR	10uH		
L6005	1-400-588-11	INDUCTOR	10uH		
		< TRANSISTOR >			
Q6001	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L		
* Q6002	6-551-870-01	TRANSISTOR	UP04601008S0		
* Q6003	6-551-870-01	TRANSISTOR	UP04601008S0		

Ref. No.	Part No.	Description			
		< RESISTOR >			
R6008	1-208-691-11	METAL CHIP	2.2K	0.50%	1/16W
R6009	1-208-695-11	METAL CHIP	3.3K	0.50%	1/16W
R6010	1-218-969-11	RES, CHIP	22K	5%	1/16W
R6011	1-208-643-11	METAL CHIP	22	0.50%	1/16W
R6012	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R6013	1-218-969-11	RES, CHIP	22K	5%	1/16W
R6014	1-218-967-11	METAL CHIP	15K	5%	1/16W
R6015	1-218-969-11	RES, CHIP	22K	5%	1/16W
R6018	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R6019	1-208-699-11	METAL CHIP	4.7K	0.50%	1/16W
R6020	1-218-990-81	SHORT CHIP	0		
R6021	1-218-977-11	METAL CHIP	100K	5%	1/16W
R6025	1-218-990-81	SHORT CHIP	0		
R6026	1-218-965-11	METAL CHIP	10K	5%	1/16W
R6027	1-218-965-11	METAL CHIP	10K	5%	1/16W

A-1616-348-A PI-029 BOARD, COMPLETE
****

(BT7001 is not included in PI-029 complete board.)

< BATTERY HOLDER >

⚠*BH7001 1-756-615-51 HOLDER, BATTERY (Note)

< BATTERY >

⚠BT7001 1-756-134-12 BATTERY, STORAGE, LITHIUM (Note)

< CAPACITOR >

C7007	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C7009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C7127	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7128	1-100-786-91	TANTAL. CHIP	22uF	20%	6.3V
C7130	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

< CONNECTOR >

CN7002	1-816-928-11	PIN, CONNECTOR 22P
CN7003	1-778-506-21	PIN, CONNECTOR (PC BOARD) 2P

CAUTION
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

注意
電池の交換は，正しく行わないと破裂する恐れがあります。電池を交換する場合には必ず同じ型名の電池又は同等品と交換してください。

Note: Replace the battery holder (BH7001) together when replacing the lithium storage battery (BT7001) on the PI-029 board. (The battery holder removed once cannot be used again.)
When mounting these parts, mount new battery holder first and attach new lithium battery next.

ノート: PI-029基板のリチウム蓄電池（BT7001）を交換する場合はバッテリホルダ（BH7001）も同時に新品に交換して下さい。（一度使用したバッテリホルダは再使用できません。）
部品取り付けの際は，先にバッテリホルダを取り付けてからリチウム電池を装着して下さい。

• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description			
CN7004	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
CN7005	1-794-375-21	PIN, CONNECTOR 2P			
* CN7006	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P			
* CN7007	1-817-459-71	CONNECTOR, FPC (ZIF) 14P			
* CN7011	1-817-698-81	CONNECTOR, FPC (ZIF) 21P			
CN7012	1-816-655-61	CONNECTOR, FFC/FPC 8P			
* CN7013	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P			
		< IC >			
IC7003	6-707-702-01	IC NJM2746RB1 (TE2)			
IC7105	6-707-702-01	IC NJM2746RB1 (TE2)			
		< TRANSISTOR >			
Q7001	6-550-238-01	TRANSISTOR	DTA114EMFS6T2L		
Q7002	6-550-238-01	TRANSISTOR	DTA114EMFS6T2L		
Q7003	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q7004	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
Q7005	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
		< RESISTOR >			
R7005	1-218-990-81	SHORT CHIP	0		
R7006	1-218-990-81	SHORT CHIP	0		
R7013	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R7014	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R7015	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R7016	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R7019	1-216-864-11	SHORT CHIP	0		
R7143	1-219-602-11	METAL CHIP	68K	0.50%	1/16W
R7144	1-208-930-11	METAL CHIP	62K	0.50%	1/16W
R7145	1-218-990-81	SHORT CHIP	0		
		< VARISTOR >			
VDR701	1-801-862-11	VARISTOR, CHIP (1608)			

	A-1616-757-A	VC-543 BOARD, COMPLETE (SERVICE) (Z5J/Z5N/Z5U)
	A-1616-758-A	VC-543 BOARD, COMPLETE (SERVICE) (Z5C/Z5E/Z5P)

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(IC2402 and IC3804 are not supplied, but these are included in VC-543 complete board (SERVICE).)

< CAPACITOR >

C1201	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1202	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1204	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1205	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1206	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1207	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1208	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1224	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C1225	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1401	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1404	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1406	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1407	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1411	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1412	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1413	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1414	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1416	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1417	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1418	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C1419	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1420	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1421	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1422	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1426	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1427	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1428	1-164-854-11	CERAMIC CHIP	15PF	5%	50V
C1429	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1431	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1432	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1433	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1434	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1435	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1601	1-100-786-91	TANTAL. CHIP	22uF	20%	6.3V
C1602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1607	1-100-786-91	TANTAL. CHIP	22uF	20%	6.3V
C1608	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1610	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1801	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1802	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1803	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1804	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C1805	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1806	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1807	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1808	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C1810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1812	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1813	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1814	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1815	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1817	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1818	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1819	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C1820	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1822	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1823	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1824	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1825	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1826	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C1827	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1828	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1829	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1830	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1831	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1833	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1834	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1835	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1836	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1837	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1838	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1839	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1840	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1841	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C1842	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2001	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2003	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2004	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2005	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2006	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C2007	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2008	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2009	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2010	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2011	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2017	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2018	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C2019	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2020	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2021	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2022	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C2023	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C2024	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C2025	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2026	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C2028	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C2029	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2031	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2201	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C2202	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C2203	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2204	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2205	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C2206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C2211	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2212	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2213	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2214	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2215	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2218	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2219	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2220	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2221	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2222	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2223	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2224	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2225	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2226	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2227	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2228	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2229	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2230	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2231	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2232	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2233	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2234	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2235	1-100-842-91	TANTAL. CHIP	47uF	20%	6.3V
C2401	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C2402	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2405	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C2406	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C2601	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2603	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2605	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2606	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2607	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2608	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2609	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2610	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2613	1-128-934-61	CERAMIC CHIP	0.33uF	10%	10V
C2614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2615	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2616	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C2619	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2620	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2621	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2622	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2623	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2624	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2625	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2626	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2627	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2628	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2801	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C2808	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C2809	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2811	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2815	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2816	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2821	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2822	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2824	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2826	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C2827	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3201	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3203	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3212	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3214	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3215	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3216	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3301	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3302	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3303	1-117-919-11	TANTAL. CHIP	10uF	20%	6.3V
C3304	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3305	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3306	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3307	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3309	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C3310	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3311	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C3401	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C3402	1-112-001-81	CERAMIC CHIP	270PF	5%	50V
C3403	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3404	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C3405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3407	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3411	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3412	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C3414	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3418	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3420	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C3601	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C3602	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3603	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3609	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3611	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3612	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3624	1-100-415-91	CERAMIC CHIP	0.47uF	10%	6.3V
C3625	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C3627	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3629	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3630	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3632	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C3633	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C3634	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C3635	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C3801	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3802	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3803	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C3804	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3805	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3808	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C3810	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C3811	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4001	1-119-750-11	TANTAL. CHIP	22uF	20%	6.3V
C4002	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4004	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4005	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4006	1-164-852-11	CERAMIC CHIP	12PF	5%	50V
C4007	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4008	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4009	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4011	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4012	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4013	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4201	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4202	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4204	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4205	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4210	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4211	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4212	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4213	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4216	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4227	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4234	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4235	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4401	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4402	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4403	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4405	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4406	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4407	1-164-850-11	CERAMIC CHIP	10PF	0.5PF	50V
C4408	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4409	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4410	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4411	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4412	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4413	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4415	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4416	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4601	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4602	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4603	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C4604	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C4605	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4606	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4607	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4608	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4610	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4611	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4612	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4613	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4614	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4615	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4616	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4617	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C4618	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4619	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C4620	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4621	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4622	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4623	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4624	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4625	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4626	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4627	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4628	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4629	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4630	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4631	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4632	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4633	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4634	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4635	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4636	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C4637	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
* C4638	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C4639	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C4640	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C4641	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4642	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4643	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4644	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4646	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4649	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C4650	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
* C4652	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C4653	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4654	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4659	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4662	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
* C4663	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
* C4664	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C4665	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C4666	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C4670	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4671	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C4672	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C4678	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4679	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V

Ref. No.	Part No.	Description			
C4680	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C4681	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4683	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4684	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4687	1-100-591-91	CERAMIC CHIP	1uF	10%	25V
C4692	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4706	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4707	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4709	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C4710	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4718	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4726	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C4730	1-107-819-11	CERAMIC CHIP	0.022uF	10%	16V
C4742	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C4744	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4746	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4747	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C4748	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4749	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C4751	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C5008	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C5010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5016	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C5022	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C5023	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5024	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5025	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C5026	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C5027	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C6001	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6002	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6004	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6005	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6006	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6007	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6008	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C6009	1-165-897-11	TANTAL. CHIP	22uF	20%	10V
C6010	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6011	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6012	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6014	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6015	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6016	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6017	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C6018	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6020	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C6022	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6023	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6024	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6025	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C6501	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6502	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6503	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6505	1-137-704-91	TANTAL. CHIP	10uF	20%	10V
C6506	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6507	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V

Ref. No.	Part No.	Description			
C6508	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6509	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C6510	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6511	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C6512	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6513	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C7001	1-100-844-91	TANTAL. CHIP	22uF	20%	10V
C7002	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C7003	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C7004	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7005	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7006	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C7008	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7009	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C7015	1-127-895-91	TANTAL. CHIP	22uF	20%	4V
C7016	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8001	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C8002	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C8003	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C8004	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8005	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C8006	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
C8008	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8007	1-127-715-11	CERAMIC CHIP	0.22uF	10%	16V
* C8009	1-112-298-91	CERAMIC CHIP	1uF	10%	16V
C8010	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C8011	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C8012	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8013	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C8015	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C8016	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C8017	1-100-566-91	CERAMIC CHIP	0.1uF	10%	25V
C8018	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8019	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C8020	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C8021	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8023	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8024	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C8025	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C8026	1-100-539-91	TANTAL. CHIP	47uF	20%	6.3V
C8027	1-115-339-11	CERAMIC CHIP	0.1uF	10%	50V
C8028	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8029	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C8030	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
C8031	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C8032	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C8034	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8036	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C8037	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C8038	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8039	1-137-934-91	TANTAL. CHIP	47uF	20%	10V
C8040	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C8041	1-125-889-11	CERAMIC CHIP	2.2uF	10%	10V
C8042	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C8043	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C8044	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C8045	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V

Ref. No.	Part No.	Description			
C8046	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8047	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8050	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8051	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8052	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8053	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8054	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8055	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C8056	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C8057	1-164-858-11	CERAMIC CHIP	22PF	5%	50V
C8058	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8059	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8060	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8061	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8062	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8063	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8064	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8065	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8066	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8067	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8068	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8069	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8070	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8071	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C8072	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8073	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8074	1-137-934-91	TANTAL. CHIP	47uF	20%	10V
C8090	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C8091	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C8092	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C8093	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C8094	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C8095	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C8096	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C8097	1-128-964-91	TANTAL. CHIP	100uF	20%	6.3V
C8100	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C8101	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C8102	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C8103	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C8109	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C8110	1-114-238-91	CERAMIC CHIP	22uF	20%	10V
C8111	1-112-717-91	CERAMIC CHIP	1uF	10%	6.3V
C8112	1-127-820-11	CERAMIC CHIP	4.7uF	10%	16V
C8115	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8116	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C8117	1-164-874-11	CERAMIC CHIP	100PF	5%	50V
C8118	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C8119	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
		< CONNECTOR >			
CN1001	1-817-920-11	CONNECTOR, FPC (ZIF) 80P			
CN1002	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P			
CN1004	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P (CPC)			
* CN1008	1-817-544-71	CONNECTOR, FPC (ZIF) 39P			
CN1011	1-816-655-61	CONNECTOR, FFC/FPC 8P			
* CN1012	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P			

Ref. No.	Part No.	Description
CN1014	1-816-648-61	FFC/FPC CONNECTOR (LIF) 20P
CN1015	1-817-920-11	CONNECTOR, FPC (ZIF) 80P
* CN1016	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P
CN1017	1-816-654-61	FFC/FPC CONNECTOR (LIF) 6P
CN1020	1-816-645-61	FFC/FPC CONNECTOR (LIF) 14P
* CN1201	1-822-221-11	CONNECTOR, COAXIAL 48P (RECEPTACLE)
* CN1202	1-822-221-11	CONNECTOR, COAXIAL 48P (RECEPTACLE)
* CN1203	1-822-221-11	CONNECTOR, COAXIAL 48P (RECEPTACLE)
CN4601	1-580-057-11	PIN, CONNECTOR (SMD) 4P
* CN5001	1-819-873-61	CONNECTOR, FPC (ZIF) 21P
* CN5002	1-817-283-71	CONNECTOR, FPC (ZIF) 51P
* CN5003	1-816-643-51	FFC/FPC CONNECTOR (LIF) 10P
		< DIODE >
D3301	8-719-069-59	DIODE UDZSNPTE-178.2B
* D4201	6-501-947-01	DIODE MA2S1110G8S0
* D4202	6-501-947-01	DIODE MA2S1110G8S0
* D4203	6-501-947-01	DIODE MA2S1110G8S0
* D4204	6-501-947-01	DIODE MA2S1110G8S0
D4602	8-719-027-76	DIODE 1SS357-TPH3
* D4603	6-502-146-01	DIODE MA2S7280G8S0
* D4604	6-502-150-01	DIODE MA2SD320G8S0
D4605	8-719-074-08	DIODE MA4ZD03001S0
* D4607	6-502-150-01	DIODE MA2SD320G8S0
* D4608	6-502-150-01	DIODE MA2SD320G8S0
* D4612	6-501-961-01	DIODE MAZS120G08S0
* D4613	6-501-961-01	DIODE MAZS120G08S0
* D4618	6-502-144-01	DIODE MA3S132EG8S0
D4619	8-719-074-67	DIODE EDZ-TE61-5.6B
D4620	8-719-074-67	DIODE EDZ-TE61-5.6B
D4622	8-719-081-19	DIODE 1SS383 (T5RSONY1)
D8002	8-719-056-23	DIODE MA2S111-(K8).SO
		< FUSE >
⚠F4601	1-576-406-31	FUSE (1.4A/32V)
⚠F4603	1-576-406-31	FUSE (1.4A/32V)
⚠F4604	1-576-406-31	FUSE (1.4A/32V)
⚠F4605	1-576-406-31	FUSE (1.4A/32V)
⚠F4606	1-576-406-31	FUSE (1.4A/32V)
⚠F4607	1-576-406-31	FUSE (1.4A/32V)
⚠F4608	1-576-406-31	FUSE (1.4A/32V)
⚠F4609	1-576-406-31	FUSE (1.4A/32V)
		< FERRITE BEAD >
FB1401	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB1402	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB1403	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
* FB1405	1-481-250-11	INDUCTOR, FERRITE BEAD (1005)
FB1406	1-400-620-21	INDUCTOR, FERRITE BEAD (1005)
FB1601	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB1602	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB1801	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB1802	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB1803	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2001	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2002	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB2201	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2401	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB2801	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB2802	1-400-331-11	FERRITE, EMI (SMD) (1005)
FB3401	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3601	1-469-581-21	INDUCTOR, FERRITE BEAD (1005)
FB3602	1-400-723-11	INDUCTOR, FERRITE BEAD (1005)
FB3606	1-400-723-11	INDUCTOR, FERRITE BEAD (1005)
FB3607	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3608	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3610	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB3801	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB3802	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB3803	1-469-082-21	INDUCTOR, FERRITE BEAD (1005)
FB4202	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB4401	1-400-619-11	BEAD, FERRITE (CHIP) (1608)
FB6001	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
FB6501	1-500-238-11	BEAD, FERRITE (CHIP) (1608)
		< FILTER >
FL3201	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL3202	1-234-939-21	FILTER, EMI REMOVAL (SMD)
FL3203	1-234-939-21	FILTER, EMI REMOVAL (SMD)
		< IC >
IC1201	6-703-977-01	IC R1114Q331D-TR-FA
IC1202	6-703-977-01	IC R1114Q331D-TR-FA
IC1203	6-703-976-01	IC R1114Q181D-TR-FA
IC1204	6-703-976-01	IC R1114Q181D-TR-FA
IC1205	6-703-976-01	IC R1114Q181D-TR-FA
IC1209	6-703-976-01	IC R1114Q181D-TR-FA
* IC1401	6-710-308-01	IC CXD9891GG
IC1403	8-759-643-94	IC TC7SLU04FU (TE85R)
IC1404	6-701-979-01	IC TC7WB66FK (TE85R)
* IC1601	6-712-228-01	IC K4M51323LC-DN75T
* IC1602	6-713-562-01	IC V55C2256164VBK7I (TP)
* IC1801	6-710-743-01	IC S4DF006X02-Y071-K12K4C
IC2001	6-708-108-01	IC TLS26A100PFBR
IC2002	6-707-959-01	IC AN12920AAVB
* IC2201	8-753-276-37	IC CXD3195AGG-T6
* IC2401	6-710-306-01	IC HYE18M256320CFX-7.5
IC2402	(Not supplied)	IC S29AL016D70BFI013
(IC2402 is supplied including in VC-543 complete board (SERVICE).)		
* IC2601	6-710-783-01	IC MB8AA1121BGL-G-ERE1
* IC2801	6-712-134-01	IC T3Z19XBG-0001 (E02)
IC3201	6-711-003-01	IC T6UL2XBG-0002 (EO2)
* IC3301	6-710-770-01	IC AD9889BBBCZRL-80
IC3302	6-705-338-01	IC TK11250CMCL-G
* IC3401	6-710-516-01	IC SN200507002ZZCR
* IC3601	6-710-594-01	IC S4LFS33X0-Y070
IC3804	(Not supplied)	IC S99-50031-33-ER
(IC3804 is supplied including in VC-543 complete board (SERVICE).)		
IC3805	6-702-356-01	IC AK6512CL-L
IC3806	6-707-634-01	IC W9816G6CB-7-ER20
* IC4001	6-808-391-01	IC MB95005ABGL-G-119-ERE1
* IC4201	6-808-417-01	IC MB91195ABGL-G-262-ERE1
IC4202	6-706-013-01	IC AK6514CF-E2
IC4203	6-704-974-01	IC AK6512CAS-E2

• Refer to page 5-1 for mark ⚠.

Ref. No.	Part No.	Description
* IC4401	6-808-385-01	IC MB91195ABGL-G-261-ERE1
* IC4601	6-710-636-01	IC MB44C005BBGL-G-ERE1
IC4603	6-708-133-01	IC TK72130CSCL-G
IC4606	6-707-208-01	IC TK11100CSCB-G
* IC4607	6-708-464-01	IC R1114Q251D-TR-FA
IC4611	8-759-581-11	IC NJM2125F (TE2)
IC4612	6-703-977-01	IC R1114Q331D-TR-FA
* IC5003	6-708-444-01	IC R1114Q281D-TR-FA
IC5004	6-707-208-01	IC TK11100CSCB-G
* IC6001	6-807-895-01	IC BU2343AGLU-E2
IC6002	8-759-681-42	IC NJM12902V (TE2)
* IC6501	6-807-895-01	IC BU2343AGLU-E2
* IC7001	6-709-026-01	IC R2J30500LG
IC8002	6-703-228-01	IC TK11160CSCL-G
IC8003	6-702-527-01	IC AK5380VT-E2
IC8004	6-704-682-01	IC AK4384VT-E2
IC8005	8-759-529-76	IC TC74VHC595FT (EL)
IC8006	6-707-879-01	IC TC74VHC541FT (EKJ)
* IC8007	6-713-574-01	IC R2A15219FP
IC8012	6-707-208-01	IC TK11100CSCB-G

< COIL >

L1401	1-469-555-21	INDUCTOR	10uH
L1402	1-469-555-21	INDUCTOR	10uH
L1403	1-469-555-21	INDUCTOR	10uH
L1404	1-400-353-21	INDUCTOR	22uH
L1801	1-400-676-11	INDUCTOR	22uH
L1802	1-400-675-11	INDUCTOR	10uH
L1803	1-400-588-11	INDUCTOR	10uH
L1804	1-400-588-11	INDUCTOR	10uH
L1805	1-400-676-11	INDUCTOR	22uH
L2001	1-400-588-11	INDUCTOR	10uH
L2002	1-400-588-11	INDUCTOR	10uH
L2003	1-400-588-11	INDUCTOR	10uH
L2006	1-400-588-11	INDUCTOR	10uH
L2201	1-400-675-11	INDUCTOR	10uH
L2202	1-400-676-11	INDUCTOR	22uH
L2203	1-400-676-11	INDUCTOR	22uH
L2204	1-400-676-11	INDUCTOR	22uH
L2205	1-400-676-11	INDUCTOR	22uH
L2601	1-400-675-11	INDUCTOR	10uH
L2602	1-400-675-11	INDUCTOR	10uH
L2603	1-400-675-11	INDUCTOR	10uH
L3301	1-400-588-11	INDUCTOR	10uH
L3302	1-400-588-11	INDUCTOR	10uH
L3303	1-400-588-11	INDUCTOR	10uH
L3401	1-400-588-11	INDUCTOR	10uH
L4601	1-456-136-21	INDUCTOR	10uH
L4602	1-456-497-11	INDUCTOR	15uH
L4603	1-456-497-11	INDUCTOR	15uH
L4604	1-456-136-21	INDUCTOR	10uH
L4605	1-456-497-11	INDUCTOR	15uH
L4606	1-456-136-21	INDUCTOR	10uH
L4607	1-456-497-11	INDUCTOR	15uH
L4608	1-456-497-11	INDUCTOR	15uH
L4609	1-456-497-11	INDUCTOR	15uH
L4610	1-469-549-21	INDUCTOR	1uH
L4611	1-456-498-11	INDUCTOR	47uH
L4612	1-469-549-21	INDUCTOR	1uH
L4613	1-469-551-21	INDUCTOR	2.2uH
L4615	1-469-549-21	INDUCTOR	1uH
L4616	1-469-561-21	INDUCTOR	100uH
L4618	1-469-555-21	INDUCTOR	10uH
L4622	1-469-555-21	INDUCTOR	10uH
L4623	1-469-555-21	INDUCTOR	10uH
L4624	1-469-549-21	INDUCTOR	1uH
L4625	1-469-549-21	INDUCTOR	1uH
L4626	1-469-549-21	INDUCTOR	1uH
L4627	1-469-549-21	INDUCTOR	1uH
L5004	1-469-555-21	INDUCTOR	10uH
L5007	1-469-555-21	INDUCTOR	10uH
L6001	1-469-845-11	INDUCTOR	4.7uH
L6501	1-469-757-21	INDUCTOR	10uH
L7001	1-400-837-11	INDUCTOR	2.2uH
L7002	1-469-967-21	INDUCTOR	10uH
L8001	1-400-588-11	INDUCTOR	10uH
* L8002	1-457-690-11	INDUCTOR	33uH
* L8003	1-457-690-11	INDUCTOR	33uH
L8004	1-400-588-11	INDUCTOR	10uH
L8005	1-400-676-11	INDUCTOR	22uH
L8006	1-400-588-11	INDUCTOR	10uH
L8007	1-400-588-11	INDUCTOR	10uH
L8009	1-400-588-11	INDUCTOR	10uH

< LINE FILTER >

LF3301	1-457-223-11	COMMON MODE CHOKE COIL
LF3302	1-457-223-11	COMMON MODE CHOKE COIL
LF3303	1-457-223-11	COMMON MODE CHOKE COIL
LF3304	1-457-223-11	COMMON MODE CHOKE COIL
LF3404	1-457-064-13	COMMON MODE CHOKE COIL

< TRANSISTOR >

Q2001	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2002	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2003	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2004	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2005	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2006	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2007	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2008	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q2009	6-550-232-01	TRANSISTOR	2SA2029FS6T2LQ/R
Q3601	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3602	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q3603	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q3604	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L
Q3605	8-729-053-54	TRANSISTOR	HN1A01FE-Y/GR (TPLR3)
Q3606	6-550-174-01	TRANSISTOR	2SA2030T2L
* Q4601	6-551-796-01	TRANSISTOR	UNR92A3G08S0
Q4602	6-551-792-01	TRANSISTOR	UNR91ABG08S0
Q4603	8-729-056-72	TRANSISTOR	MCH5805-TL-E
Q4604	8-729-056-02	TRANSISTOR	MCH5804-TL-E
Q4611	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q4612	6-551-184-01	TRANSISTOR	MCH6305-TL-E-S
Q4615	6-551-115-01	TRANSISTOR	ECH8631-S-TL-E

Ref. No.	Part No.	Description			
Q4616	8-729-047-68	TRANSISTOR	SSM3K03FE (TPL3)		
* Q5001	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q5002	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q5004	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
Q5005	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L		
* Q7001	6-551-796-01	TRANSISTOR	UNR92A3G08S0		
* Q7002	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
* Q7003	6-551-796-01	TRANSISTOR	UNR92A3G08S0		
* Q7004	6-551-881-01	TRANSISTOR	2SA2174GR8S0		
Q8001	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8002	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8003	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8004	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8005	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8006	8-729-202-38	TRANSISTOR	2SC3326N-A		
Q8007	6-550-242-01	TRANSISTOR	DTC114EMFS6T2L		
Q8014	6-551-184-01	TRANSISTOR	MCH6305-TL-E-S		
Q8015	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R		
		< RESISTOR >			
R1036	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1037	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1042	1-216-864-11	SHORT CHIP	0		
R1045	1-216-817-11	METAL CHIP	470	5%	1/10W
R1046	1-216-817-11	METAL CHIP	470	5%	1/10W
R1055	1-218-990-81	SHORT CHIP	0		
R1056	1-218-990-81	SHORT CHIP	0		
R1057	1-218-990-81	SHORT CHIP	0		
R1061	1-216-864-11	SHORT CHIP	0		
R1309	1-218-990-81	SHORT CHIP	0		
R1310	1-218-990-81	SHORT CHIP	0		
R1311	1-218-990-81	SHORT CHIP	0		
R1401	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1404	1-218-977-11	METAL CHIP	100K	5%	1/16W
R1405	1-218-933-11	METAL CHIP	22	5%	1/16W
R1407	1-218-940-11	METAL CHIP	82	5%	1/16W
R1408	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1412	1-218-990-81	SHORT CHIP	0		
R1414	1-218-990-81	SHORT CHIP	0		
R1418	1-216-864-11	SHORT CHIP	0		
R1421	1-218-990-81	SHORT CHIP	0		
R1422	1-218-977-11	METAL CHIP	100K	5%	1/16W
R1423	1-218-990-81	SHORT CHIP	0		
R1426	1-218-973-11	METAL CHIP	47K	5%	1/16W
R1427	1-218-990-81	SHORT CHIP	0		
R1430	1-218-990-81	SHORT CHIP	0		
R1604	1-218-990-81	SHORT CHIP	0		
R1805	1-218-977-11	METAL CHIP	100K	5%	1/16W
R1807	1-218-990-81	SHORT CHIP	0		
R1808	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R1809	1-218-935-11	METAL CHIP	33	5%	1/16W
R1810	1-218-935-11	METAL CHIP	33	5%	1/16W
R1811	1-218-937-11	METAL CHIP	47	5%	1/16W
R1812	1-218-935-11	METAL CHIP	33	5%	1/16W
R1813	1-218-941-81	METAL CHIP	100	5%	1/16W
R1814	1-218-953-11	METAL CHIP	1K	5%	1/16W
R1815	1-218-941-81	METAL CHIP	100	5%	1/16W

Ref. No.	Part No.	Description			
R1816	1-218-990-81	SHORT CHIP	0		
R1817	1-218-929-11	METAL CHIP	10	5%	1/16W
R1818	1-218-935-11	METAL CHIP	33	5%	1/16W
R1819	1-218-965-11	METAL CHIP	10K	5%	1/16W
R1821	1-218-990-81	SHORT CHIP	0		
R1822	1-208-699-11	METAL CHIP	4.7K	0.50%	1/16W
R1823	1-218-990-81	SHORT CHIP	0		
R1825	1-218-990-81	SHORT CHIP	0		
R1827	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R1829	1-218-973-11	METAL CHIP	47K	5%	1/16W
R1831	1-218-990-81	SHORT CHIP	0		
R1832	1-218-935-11	METAL CHIP	33	5%	1/16W
R1833	1-218-965-11	METAL CHIP	10K	5%	1/16W
R1836	1-218-990-81	SHORT CHIP	0		
* R2001	1-208-869-11	METAL CHIP	180	0.50%	1/16W
* R2002	1-208-869-11	METAL CHIP	180	0.50%	1/16W
* R2003	1-208-869-11	METAL CHIP	180	0.50%	1/16W
R2004	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2005	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2006	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2007	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2008	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2009	1-208-677-11	METAL CHIP	560	0.50%	1/16W
R2013	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2014	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2015	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2016	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2017	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2018	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2019	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2020	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2021	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2022	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R2023	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R2024	1-208-860-81	METAL CHIP	75	0.50%	1/16W
R2207	1-218-933-11	METAL CHIP	22	5%	1/16W
R2208	1-218-941-81	METAL CHIP	100	5%	1/16W
R2209	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2210	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2212	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2213	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2214	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2215	1-218-990-81	SHORT CHIP	0		
R2217	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2218	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2219	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2220	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2221	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2222	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2223	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2224	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2226	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2228	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2230	1-218-935-11	METAL CHIP	33	5%	1/16W
R2231	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2233	1-218-990-81	SHORT CHIP	0		
R2235	1-218-990-81	SHORT CHIP	0		

Ref. No.	Part No.	Description			
R2236	1-218-990-81	SHORT CHIP	0		
R2238	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R2402	1-218-990-81	SHORT CHIP	0		
R2605	1-218-941-81	METAL CHIP	100	5%	1/16W
R2607	1-218-941-81	METAL CHIP	100	5%	1/16W
R2609	1-218-990-81	SHORT CHIP	0		
R2610	1-218-990-81	SHORT CHIP	0		
R2612	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2613	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2615	1-218-990-81	SHORT CHIP	0		
R2619	1-218-990-81	SHORT CHIP	0		
R2620	1-218-990-81	SHORT CHIP	0		
R2622	1-218-953-11	METAL CHIP	1K	5%	1/16W
R2624	1-218-990-81	SHORT CHIP	0		
R2625	1-218-990-81	SHORT CHIP	0		
R2801	1-218-990-81	SHORT CHIP	0		
R2803	1-218-990-81	SHORT CHIP	0		
R2804	1-218-990-81	SHORT CHIP	0		
R3201	1-218-929-11	METAL CHIP	10	5%	1/16W
R3202	1-218-929-11	METAL CHIP	10	5%	1/16W
R3204	1-218-990-81	SHORT CHIP	0		
R3205	1-218-941-81	METAL CHIP	100	5%	1/16W
R3302	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R3304	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R3311	1-208-720-11	METAL CHIP	36K	0.50%	1/16W
R3312	1-208-886-81	METAL CHIP	910	0.50%	1/16W
R3313	1-218-935-11	METAL CHIP	33	5%	1/16W
R3314	1-218-935-11	METAL CHIP	33	5%	1/16W
R3315	1-218-935-11	METAL CHIP	33	5%	1/16W
R3316	1-218-935-11	METAL CHIP	33	5%	1/16W
R3317	1-218-935-11	METAL CHIP	33	5%	1/16W
R3318	1-218-935-11	METAL CHIP	33	5%	1/16W
R3319	1-218-935-11	METAL CHIP	33	5%	1/16W
R3320	1-218-935-11	METAL CHIP	33	5%	1/16W
R3321	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R3322	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R3323	1-218-973-11	METAL CHIP	47K	5%	1/16W
R3325	1-218-990-81	SHORT CHIP	0		
R3326	1-218-990-81	SHORT CHIP	0		
R3327	1-218-990-81	SHORT CHIP	0		
R3401	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3402	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3403	1-208-652-11	METAL CHIP	51	0.50%	1/16W
R3404	1-208-652-11	METAL CHIP	51	0.50%	1/16W
R3405	1-208-652-11	METAL CHIP	51	0.50%	1/16W
R3406	1-208-652-11	METAL CHIP	51	0.50%	1/16W
R3407	1-218-990-81	SHORT CHIP	0		
R3408	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3409	1-208-906-81	METAL CHIP	6.2K	0.50%	1/16W
R3410	1-218-990-81	SHORT CHIP	0		
R3411	1-218-990-81	SHORT CHIP	0		
R3412	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3413	1-218-990-81	SHORT CHIP	0		
R3601	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3602	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3605	1-218-973-11	METAL CHIP	47K	5%	1/16W
R3606	1-218-953-11	METAL CHIP	1K	5%	1/16W

Ref. No.	Part No.	Description			
R3607	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3608	1-218-985-11	METAL CHIP	470K	5%	1/16W
R3609	1-218-985-11	METAL CHIP	470K	5%	1/16W
R3613	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3614	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3615	1-218-990-81	SHORT CHIP	0		
R3616	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3617	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3618	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3627	1-218-941-81	METAL CHIP	100	5%	1/16W
R3628	1-218-933-11	METAL CHIP	22	5%	1/16W
R3631	1-218-985-11	METAL CHIP	470K	5%	1/16W
R3632	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3633	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3634	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3635	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3636	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3637	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3638	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3639	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3640	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3641	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3642	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3643	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3644	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3645	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3646	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3647	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3648	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3649	1-218-965-11	METAL CHIP	10K	5%	1/16W
R3650	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R3651	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R3653	1-218-940-11	METAL CHIP	82	5%	1/16W
R3655	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3661	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3663	1-218-955-11	METAL CHIP	1.5K	5%	1/16W
R3664	1-218-962-11	METAL CHIP	5.6K	5%	1/16W
R3665	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R3666	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R3668	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R3673	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3676	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3677	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3678	1-218-953-11	METAL CHIP	1K	5%	1/16W
R3801	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3802	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3803	1-218-941-81	METAL CHIP	100	5%	1/16W
R3806	1-218-977-11	METAL CHIP	100K	5%	1/16W
R3807	1-218-941-81	METAL CHIP	100	5%	1/16W
R3808	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4002	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4003	1-218-949-11	METAL CHIP	470	5%	1/16W
R4004	1-218-973-11	METAL CHIP	47K	5%	1/16W
R4006	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R4007	1-219-570-11	METAL CHIP	10M	5%	1/10W
R4008	1-218-990-81	SHORT CHIP	0		
R4009	1-218-867-11	METAL CHIP	6.8K	0.50%	1/10W

Ref. No.	Part No.	Description			
R4010	1-208-893-11	METAL CHIP	1.8K	0.50%	1/16W
R4012	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4013	1-218-945-11	METAL CHIP	220	5%	1/16W
R4015	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4016	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4017	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4018	1-218-965-11	METAL CHIP	10K	5%	1/16W (Z5C/Z5E/Z5P)
R4019	1-218-965-11	METAL CHIP	10K	5%	1/16W (Z5J/Z5N/Z5U)
R4020	1-218-959-11	METAL CHIP	3.3K	5%	1/16W
R4021	1-218-967-11	METAL CHIP	15K	5%	1/16W
R4022	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R4023	1-218-985-11	METAL CHIP	470K	5%	1/16W
R4025	1-208-927-11	METAL CHIP	47K	0.50%	1/16W
R4026	1-208-935-11	METAL CHIP	100K	0.50%	1/16W
R4027	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4028	1-216-833-11	METAL CHIP	10K	5%	1/10W
R4029	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4030	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4031	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4032	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4033	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4034	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4035	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4202	1-218-990-81	SHORT CHIP	0		
R4203	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4204	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4206	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4207	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4208	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4209	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4210	1-218-941-81	METAL CHIP	100	5%	1/16W
R4211	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4212	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4213	1-218-990-81	SHORT CHIP	0		
R4215	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4216	1-218-985-11	METAL CHIP	470K	5%	1/16W
R4217	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4218	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4219	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4220	1-218-973-11	METAL CHIP	47K	5%	1/16W
R4223	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4248	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4250	1-218-990-81	SHORT CHIP	0		
R4251	1-218-990-81	SHORT CHIP	0		
R4253	1-218-990-81	SHORT CHIP	0		
R4254	1-218-990-81	SHORT CHIP	0		
R4255	1-218-990-81	SHORT CHIP	0		
R4270	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4271	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4272	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4273	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4274	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4279	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4280	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4281	1-218-972-11	METAL CHIP	39K	5%	1/16W

Ref. No.	Part No.	Description			
R4282	1-218-972-11	METAL CHIP	39K	5%	1/16W
R4283	1-218-973-11	METAL CHIP	47K	5%	1/16W
R4287	1-218-990-81	SHORT CHIP	0		
R4288	1-218-990-81	SHORT CHIP	0 (Z5J/Z5N/Z5U)		
R4289	1-218-990-81	SHORT CHIP	0 (Z5C/Z5E/Z5P)		
R4401	1-218-941-81	METAL CHIP	100	5%	1/16W
R4402	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4403	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4405	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4406	1-218-990-81	SHORT CHIP	0		
R4413	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4414	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4415	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4418	1-218-985-11	METAL CHIP	470K	5%	1/16W
R4420	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4421	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4423	1-218-985-11	METAL CHIP	470K	5%	1/16W
R4424	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4427	1-218-981-91	METAL CHIP	220K	5%	1/16W
R4428	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4429	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4430	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4431	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4432	1-218-975-11	METAL CHIP	68K	5%	1/16W
R4437	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4438	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4439	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4440	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4442	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4443	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4446	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4601	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R4604	1-208-931-11	METAL CHIP	68K	0.50%	1/16W
R4606	1-218-961-11	METAL CHIP	4.7K	5%	1/16W
R4607	1-216-789-11	METAL CHIP	2.2	5%	1/10W
R4608	1-218-941-81	METAL CHIP	100	5%	1/16W
R4610	1-218-944-11	METAL CHIP	180	5%	1/16W
R4611	1-208-699-11	METAL CHIP	4.7K	0.50%	1/16W
R4612	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R4613	1-208-923-11	METAL CHIP	33K	0.50%	1/16W
R4614	1-218-969-11	RES, CHIP	22K	5%	1/16W
R4615	1-218-987-11	METAL CHIP	680K	5%	1/16W
R4616	1-218-979-11	METAL CHIP	150K	5%	1/16W
R4617	1-218-947-11	METAL CHIP	330	5%	1/16W
R4618	1-218-969-11	RES, CHIP	22K	5%	1/16W
R4619	1-218-969-11	RES, CHIP	22K	5%	1/16W
R4620	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4629	1-218-990-81	SHORT CHIP	0		
R4637	1-216-295-91	SHORT CHIP	0		
R4638	1-216-295-91	SHORT CHIP	0		
R4639	1-216-295-91	SHORT CHIP	0		
R4650	1-216-295-91	SHORT CHIP	0		
R4653	1-208-935-11	METAL CHIP	100K	0.50%	1/16W
R4654	1-218-990-81	SHORT CHIP	0		
R4655	1-208-923-11	METAL CHIP	33K	0.50%	1/16W
R4668	1-218-958-11	METAL CHIP	2.7K	5%	1/16W
R4669	1-208-889-11	METAL CHIP	1.2K	0.50%	1/16W

Ref. No.	Part No.	Description			
R4677	1-216-295-91	SHORT CHIP	0		
R4695	1-216-295-91	SHORT CHIP	0		
R4705	1-218-965-11	METAL CHIP	10K	5%	1/16W
R4706	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4707	1-218-953-11	METAL CHIP	1K	5%	1/16W
R4714	1-216-295-91	SHORT CHIP	0		
R4723	1-218-989-11	RES, CHIP	1M	5%	1/16W
R4726	1-218-977-11	METAL CHIP	100K	5%	1/16W
R4730	1-216-295-91	SHORT CHIP	0		
R4734	1-208-683-11	METAL CHIP	1K	0.50%	1/16W
R4735	1-208-699-11	METAL CHIP	4.7K	0.50%	1/16W
R4738	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R4739	1-208-703-11	METAL CHIP	6.8K	0.50%	1/16W
R4742	1-216-864-11	SHORT CHIP	0		
R4743	1-216-864-11	SHORT CHIP	0		
R4747	1-218-975-11	METAL CHIP	68K	5%	1/16W
R5100	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5101	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5102	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5104	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5105	1-218-953-11	METAL CHIP	1K	5%	1/16W
R5107	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5117	1-208-923-11	METAL CHIP	33K	0.50%	1/16W
R5118	1-208-703-11	METAL CHIP	6.8K	0.50%	1/16W
R5119	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R6016	1-208-689-11	METAL CHIP	1.8K	0.50%	1/16W
R6017	1-208-689-11	METAL CHIP	1.8K	0.50%	1/16W
R6019	1-208-689-11	METAL CHIP	1.8K	0.50%	1/16W
R6020	1-208-689-11	METAL CHIP	1.8K	0.50%	1/16W
R6021	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6022	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6023	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6024	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6026	1-218-958-11	METAL CHIP	2.7K	5%	1/16W
R6027	1-218-958-11	METAL CHIP	2.7K	5%	1/16W
R6028	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6029	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6030	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6032	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6041	1-218-990-81	SHORT CHIP	0		
R6045	1-218-990-81	SHORT CHIP	0		
R6046	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6047	1-218-965-11	METAL CHIP	10K	5%	1/16W
R6048	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6049	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6050	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6051	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6054	1-218-958-11	METAL CHIP	2.7K	5%	1/16W
R6055	1-218-958-11	METAL CHIP	2.7K	5%	1/16W
R6510	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6511	1-208-909-11	METAL CHIP	8.2K	0.50%	1/16W
R6516	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R6518	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R6520	1-218-990-81	SHORT CHIP	0		
R6526	1-218-972-11	METAL CHIP	39K	5%	1/16W
R6527	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R6529	1-218-972-11	METAL CHIP	39K	5%	1/16W

Ref. No.	Part No.	Description			
R6531	1-218-965-11	METAL CHIP	10K	5%	1/16W
R6532	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R6533	1-218-956-11	METAL CHIP	1.8K	5%	1/16W
R6537	1-218-990-81	SHORT CHIP	0		
R6540	1-208-721-11	METAL CHIP	39K	0.50%	1/16W
R7004	1-218-990-81	SHORT CHIP	0		
R7005	1-218-877-11	METAL CHIP	18K	0.50%	1/10W
R7007	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R7008	1-218-990-81	SHORT CHIP	0		
R7009	1-218-883-11	METAL CHIP	33K	0.50%	1/10W
R7010	1-218-881-11	METAL CHIP	27K	0.50%	1/10W
R7011	1-208-717-11	METAL CHIP	27K	0.50%	1/16W
R7012	1-218-869-11	METAL CHIP	8.2K	0.50%	1/10W
R7014	1-218-877-11	METAL CHIP	18K	0.50%	1/10W
R7016	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R7017	1-218-990-81	SHORT CHIP	0		
R7018	1-218-883-11	METAL CHIP	33K	0.50%	1/10W
R7019	1-218-881-11	METAL CHIP	27K	0.50%	1/10W
R7020	1-208-717-11	METAL CHIP	27K	0.50%	1/16W
R7021	1-218-941-81	METAL CHIP	100	5%	1/16W
R7022	1-218-869-11	METAL CHIP	8.2K	0.50%	1/10W
R7024	1-216-864-11	SHORT CHIP	0		
R7026	1-216-864-11	SHORT CHIP	0		
R7028	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7029	1-216-864-11	SHORT CHIP	0		
R7030	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7031	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7032	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7033	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7034	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7035	1-218-977-11	METAL CHIP	100K	5%	1/16W
R7038	1-218-953-11	METAL CHIP	1K	5%	1/16W
R7040	1-218-973-11	METAL CHIP	47K	5%	1/16W
R7042	1-218-953-11	METAL CHIP	1K	5%	1/16W
R7043	1-218-973-11	METAL CHIP	47K	5%	1/16W
R8001	1-218-971-11	METAL CHIP	33K	5%	1/16W
R8004	1-208-923-11	METAL CHIP	33K	0.50%	1/16W
R8005	1-208-947-11	METAL CHIP	330K	0.50%	1/16W
R8006	1-218-892-11	METAL CHIP	75K	0.50%	1/10W
R8007	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8008	1-218-969-11	RES, CHIP	22K	5%	1/16W
R8011	1-208-927-11	METAL CHIP	47K	0.50%	1/16W
R8012	1-208-927-11	METAL CHIP	47K	0.50%	1/16W
R8013	1-218-970-11	METAL CHIP	27K	5%	1/16W
R8014	1-218-970-11	METAL CHIP	27K	5%	1/16W
R8015	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8016	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8017	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8018	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8019	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8021	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8022	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8024	1-218-989-11	RES, CHIP	1M	5%	1/16W
R8025	1-218-989-11	RES, CHIP	1M	5%	1/16W
R8026	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8030	1-211-975-11	METAL CHIP	18	0.50%	1/10W

Ref. No.	Part No.	Description			
R8031	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8032	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8033	1-211-975-11	METAL CHIP	18	0.50%	1/10W
R8035	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8036	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8037	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8038	1-218-953-11	METAL CHIP	1K	5%	1/16W
R8039	1-218-990-81	SHORT CHIP	0		
R8040	1-218-990-81	SHORT CHIP	0		
R8041	1-218-990-81	SHORT CHIP	0		
R8042	1-218-990-81	SHORT CHIP	0		
R8043	1-218-990-81	SHORT CHIP	0		
R8044	1-218-990-81	SHORT CHIP	0		
R8045	1-218-990-81	SHORT CHIP	0		
R8046	1-218-990-81	SHORT CHIP	0		
R8047	1-218-990-81	SHORT CHIP	0		
R8048	1-218-990-81	SHORT CHIP	0		
R8049	1-218-990-81	SHORT CHIP	0		
R8050	1-218-990-81	SHORT CHIP	0		
R8052	1-218-977-11	METAL CHIP	100K	5%	1/16W
R8065	1-218-971-11	METAL CHIP	33K	5%	1/16W
R8067	1-216-864-11	SHORT CHIP	0		
R8069	1-218-847-11	METAL CHIP	1K	0.50%	1/10W
R8070	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R8071	1-218-879-11	METAL CHIP	22K	0.50%	1/10W
R8072	1-218-878-11	METAL CHIP	20K	0.50%	1/10W
R8073	1-218-847-11	METAL CHIP	1K	0.50%	1/10W
R8074	1-218-871-11	METAL CHIP	10K	0.50%	1/10W
R8075	1-218-879-11	METAL CHIP	22K	0.50%	1/10W
R8076	1-218-878-11	METAL CHIP	20K	0.50%	1/10W
R8077	1-218-971-11	METAL CHIP	33K	5%	1/16W
R8079	1-208-918-11	METAL CHIP	20K	0.50%	1/16W
R8082	1-208-918-11	METAL CHIP	20K	0.50%	1/16W
R8087	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8088	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8089	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8090	1-211-979-11	METAL CHIP	27	0.50%	1/10W
R8091	1-211-975-11	METAL CHIP	18	0.50%	1/10W
R8092	1-211-975-11	METAL CHIP	18	0.50%	1/10W
R8093	1-211-975-11	METAL CHIP	18	0.50%	1/10W
R8094	1-211-975-11	METAL CHIP	18	0.50%	1/10W
R8095	1-218-971-11	METAL CHIP	33K	5%	1/16W
R8098	1-216-809-11	METAL CHIP	100	5%	1/10W
R8099	1-216-809-11	METAL CHIP	100	5%	1/10W
R8108	1-216-864-11	SHORT CHIP	0		
R8110	1-216-864-11	SHORT CHIP	0		
R8123	1-245-604-11	RES, CHIP	10M	5%	1/16W
R8124	1-245-604-11	RES, CHIP	10M	5%	1/16W
R8125	1-218-990-81	SHORT CHIP	0		
R8126	1-218-990-81	SHORT CHIP	0		
R8127	1-216-864-11	SHORT CHIP	0		
R8128	1-208-943-11	METAL CHIP	220K	0.50%	1/16W
R8129	1-218-990-81	SHORT CHIP	0		
R8130	1-208-935-11	METAL CHIP	100K	0.50%	1/16W
R8131	1-216-864-11	SHORT CHIP	0		
R8135	1-218-973-11	METAL CHIP	47K	5%	1/16W
R8136	1-218-973-11	METAL CHIP	47K	5%	1/16W

Ref. No.	Part No.	Description			
R8137	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R8138	1-208-715-11	METAL CHIP	22K	0.50%	1/16W
R8139	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
		< COMPOSITION CIRCUIT BLOCK >			
RB1001	1-234-375-21	RES, NETWORK	1K (1005X4)		
RB1002	1-234-400-21	CONDUCTOR, NETWORK	(1005X4)		
RB2201	1-234-377-21	RES, NETWORK	4.7K (1005X4)		
RB4002	1-234-381-11	RES, NETWORK	100K (1005X4)		
RB4004	1-234-378-11	RES, NETWORK	10K (1005X4)		
RB4005	1-234-375-21	RES, NETWORK	1K (1005X4)		
RB4006	1-234-375-21	RES, NETWORK	1K (1005X4)		
		< VIBRATOR >			
* X1401	1-813-907-21	QUARTZ CRYSTAL OSCILLATOR (83.076923MHz)			
* X1402	1-813-906-21	QUARTZ CRYSTAL OSCILLATOR (83.16MHz)			
X3401	1-781-045-11	VIBRATOR, CRYSTAL (24.576MHz)			
X4001	1-781-525-11	VIBRATOR, CRYSTAL (32.768kHz)			
X4201	1-795-920-11	VIBRATOR, CRYSTAL (20MHz)			
* X4401	1-767-205-81	VIBRATOR, CRYSTAL (20MHz)			
	A-1599-826-A	VF-178 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C6201	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6202	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6203	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6204	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6205	1-100-611-91	CERAMIC CHIP	22uF	20%	6.3V
C6206	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6207	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6208	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6209	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6210	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6211	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6212	1-165-884-11	CERAMIC CHIP	2.2uF	10%	6.3V
C6213	1-100-581-81	CERAMIC CHIP	0.0047uF	10%	50V
C6214	1-119-923-11	CAP, CERAMIC	0.047uF	10%	10V
C6215	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6216	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6217	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6218	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6219	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6220	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6221	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C6222	1-100-567-81	CERAMIC CHIP	0.01uF	10%	25V
C6223	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
C6224	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6225	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6226	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
C6227	1-112-746-11	CAP, CERAMIC	4.7uF	10%	6.3V
		< CONNECTOR >			
* CN6201	1-817-543-71	CONNECTOR, FPC (ZIF) 27P			

Ref. No.	Part No.	Description			
* CN6202	1-817-910-71	CONNECTOR, FPC (ZIF) 45P			
		< FERRITE BEAD >			
FB6201	1-400-927-31	BEAD, FERRITE (1005)			
FB6202	1-400-927-31	BEAD, FERRITE (1005)			
FB6203	1-400-927-31	BEAD, FERRITE (1005)			
FB6204	1-400-927-31	BEAD, FERRITE (1005)			
		< IC >			
* IC6201	6-712-180-01	IC IR3Y80Y6			
		< COIL >			
L6201	1-400-588-11	INDUCTOR	10uH		
L6202	1-400-588-11	INDUCTOR	10uH		
L6203	1-400-588-11	INDUCTOR	10uH		
L6204	1-400-588-11	INDUCTOR	10uH		
L6205	1-400-588-11	INDUCTOR	10uH		
		< RESISTOR >			
R6206	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R6207	1-208-699-11	METAL CHIP	4.7K	0.50%	1/16W
R6208	1-218-990-81	SHORT CHIP	0		
R6209	1-218-977-11	METAL CHIP	100K	5%	1/16W
R6213	1-218-953-11	METAL CHIP	1K	5%	1/16W

A-1599-620-A XL-010 BOARD, COMPLETE

****

(IC5952 is not supplied, but this is included in XL-010 complete board.)

		< CAPACITOR >			
C5815	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C5817	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5818	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5861	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C5862	1-165-989-11	CAP, CERAMIC	10uF	10%	6.3V
C5863	1-165-875-11	CERAMIC CHIP	10uF	10%	10V
C5865	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5866	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5867	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5868	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5915	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C5917	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5918	1-128-594-11	ELECT CHIP	1uF	20%	50V
C5960	1-137-910-11	TANTAL. CHIP	10uF	20%	16V
C5961	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V
* C5963	1-114-582-11	CERAMIC CHIP	0.1uF	10%	16V
C5964	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C5965	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5966	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5967	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5968	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5969	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5972	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C5973	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5974	1-112-300-91	CERAMIC CHIP	4.7uF	10%	10V
C5975	1-164-937-11	CERAMIC CHIP	0.001uF	10%	50V
C5978	1-124-779-00	ELECT CHIP	10uF	20%	16V

Ref. No.	Part No.	Description	
		< CONNECTOR >	
CN5801	1-816-650-51	FFC/FPC CONNECTOR (LIF) 24P	
CN5802	1-820-791-11	XLR CONNECTOR (RECEPTACLE) 3P (INPUT1/INPUT2)	
		< DIODE >	
* D5801	6-501-947-01	DIODE MA2S1110G8S0	
* D5802	6-501-947-01	DIODE MA2S1110G8S0	
* D5803	6-501-947-01	DIODE MA2S1110G8S0	
* D5804	6-501-947-01	DIODE MA2S1110G8S0	
* D5851	6-501-947-01	DIODE MA2S1110G8S0	
* D5852	6-501-947-01	DIODE MA2S1110G8S0	
* D5853	6-501-947-01	DIODE MA2S1110G8S0	
* D5854	6-501-947-01	DIODE MA2S1110G8S0	
* D5855	6-501-947-01	DIODE MA2S1110G8S0	
* D5856	6-501-947-01	DIODE MA2S1110G8S0	
* D5857	6-501-947-01	DIODE MA2S1110G8S0	
* D5858	6-501-947-01	DIODE MA2S1110G8S0	
* D5901	6-501-947-01	DIODE MA2S1110G8S0	
* D5902	6-501-947-01	DIODE MA2S1110G8S0	
* D5903	6-501-947-01	DIODE MA2S1110G8S0	
* D5904	6-501-947-01	DIODE MA2S1110G8S0	
* D5952	6-501-928-01	DIODE MAS3132EGLS0	
D5953	6-501-123-01	DIODE RB160M-60TR	
		< IC >	
* IC5801	6-710-823-01	IC NJM2737RB1 (TE2)	
IC5851	6-706-906-01	IC NJM2732RB1 (TE2)	
* IC5901	6-710-823-01	IC NJM2737RB1 (TE2)	
IC5952	(Not supplied)	IC TK11840LTL-G	

(IC5952 is supplied including in XL-010 complete board.)

		< COIL >	
L5801	1-400-588-11	INDUCTOR	10uH
L5802	1-400-588-11	INDUCTOR	10uH
L5901	1-400-588-11	INDUCTOR	10uH
L5902	1-400-588-11	INDUCTOR	10uH
L5951	1-456-499-11	INDUCTOR	4.7uH
L5953	1-456-499-11	INDUCTOR	4.7uH
		< TRANSISTOR >	
Q5803	6-551-294-01	TRANSISTOR	MCH6606-TL-E
Q5804	6-551-294-01	TRANSISTOR	MCH6606-TL-E
Q5805	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q5806	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L
Q5807	6-550-356-01	TRANSISTOR	MCH6616-TL-E
Q5808	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q5809	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q5903	6-551-294-01	TRANSISTOR	MCH6606-TL-E
Q5904	6-551-294-01	TRANSISTOR	MCH6606-TL-E
Q5905	6-550-237-01	TRANSISTOR	2SC5658FS6T2LQ/R
Q5906	6-550-239-01	TRANSISTOR	DTA144EMFS6T2L
Q5907	6-550-356-01	TRANSISTOR	MCH6616-TL-E
Q5908	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q5909	6-550-119-01	TRANSISTOR	DTC144EMFS6T2L
Q5953	8-729-044-37	TRANSISTOR	LSK3019FP8TL

Ref. No.	Part No.	Description			
Q5954	8-729-048-72	TRANSISTOR	2SK2615		
⚠ Q5955	8-729-117-32	TRANSISTOR	2SC4177-L6		
* Q5956	6-551-877-01	TRANSISTOR	2SC6054GR8S0		
* Q5957	6-551-877-01	TRANSISTOR	2SC6054GR8S0		
⚠ Q5958	8-729-119-64	TRANSISTOR	2SA811A-C17		
⚠ Q5959	8-729-119-64	TRANSISTOR	2SA811A-C17		
		< RESISTOR >			
R5801	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5802	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5803	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5804	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5805	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5806	1-218-985-11	METAL CHIP	470K	5%	1/16W
R5807	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5808	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5809	1-218-985-11	METAL CHIP	470K	5%	1/16W
R5810	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5811	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5812	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5813	1-216-817-11	METAL CHIP	470	5%	1/10W
R5814	1-216-817-11	METAL CHIP	470	5%	1/10W
R5815	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R5816	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5817	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R5818	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R5821	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5822	1-218-860-11	METAL CHIP	3.6K	0.5%	1/10W
R5823	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5824	1-218-860-11	METAL CHIP	3.6K	0.5%	1/10W
R5825	1-216-809-11	METAL CHIP	100	5%	1/10W
R5826	1-216-809-11	METAL CHIP	100	5%	1/10W
R5832	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5833	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5834	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5835	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5836	1-218-981-91	METAL CHIP	220K	5%	1/16W
R5837	1-218-981-91	METAL CHIP	220K	5%	1/16W
R5838	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5839	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5840	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5841	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R5842	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5843	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5851	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5852	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5853	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5854	1-218-901-11	METAL CHIP	180K	0.5%	1/10W
R5855	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5856	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5857	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5858	1-218-878-11	METAL CHIP	20K	0.5%	1/10W
R5859	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5860	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5861	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5862	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R5863	1-208-911-11	RES, CHIP	10K	0.50%	1/16W

Ref. No.	Part No.	Description			
R5864	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5865	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5866	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5867	1-216-809-11	METAL CHIP	100	5%	1/10W
R5868	1-216-809-11	METAL CHIP	100	5%	1/10W
R5901	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5902	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5903	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5904	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5905	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5906	1-218-985-11	METAL CHIP	470K	5%	1/16W
R5907	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5908	1-218-853-11	METAL CHIP	1.8K	0.5%	1/10W
R5909	1-218-985-11	METAL CHIP	470K	5%	1/16W
R5910	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5911	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5912	1-218-877-11	METAL CHIP	18K	0.5%	1/10W
R5913	1-216-817-11	METAL CHIP	470	5%	1/10W
R5914	1-216-817-11	METAL CHIP	470	5%	1/10W
R5915	1-208-711-11	RES, CHIP	15K	0.50%	1/16W
R5916	1-208-909-11	METAL CHIP	8.2K	0.5%	1/16W
R5917	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R5918	1-208-697-11	METAL CHIP	3.9K	0.5%	1/16W
R5921	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5922	1-218-835-11	METAL CHIP	330	0.5%	1/10W
R5923	1-218-860-11	METAL CHIP	3.6K	0.5%	1/10W
R5924	1-218-860-11	METAL CHIP	3.6K	0.5%	1/10W
R5925	1-216-809-11	METAL CHIP	100	5%	1/10W
R5926	1-216-809-11	METAL CHIP	100	5%	1/10W
R5932	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5933	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5934	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5935	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5936	1-218-981-91	METAL CHIP	220K	5%	1/16W
R5937	1-218-981-91	METAL CHIP	220K	5%	1/16W
R5938	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5939	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5940	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5941	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R5942	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5943	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5960	1-218-989-11	METAL CHIP	1M	5%	1/16W
R5961	1-208-883-81	METAL CHIP	680	0.5%	1/16W
R5962	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5963	1-208-893-11	METAL CHIP	1.8K	0.5%	1/16W
R5964	1-208-955-11	METAL CHIP	680K	0.5%	1/16W
R5965	1-208-944-81	METAL CHIP	240K	0.5%	1/16W
R5966	1-208-911-11	RES, CHIP	10K	0.50%	1/16W
R5967	1-218-970-11	METAL CHIP	27K	5%	1/16W
R5968	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5969	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5970	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5971	1-218-973-11	METAL CHIP	47K	5%	1/16W
R5972	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R5973	1-218-957-11	METAL CHIP	2.2K	5%	1/16W
R5974	1-216-837-11	METAL CHIP	22K	5%	1/10W

• Refer to page 5-1 for mark ⚠.

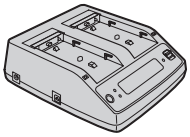
Ref. No.	Part No.	Description			
R5975	1-216-837-11	METAL CHIP	22K	5%	1/10W
R5976	1-208-894-81	METAL CHIP	2K	0.5%	1/16W
R5981	1-216-817-11	METAL CHIP	470	5%	1/10W
R5982	1-216-817-11	METAL CHIP	470	5%	1/10W
R5983	1-216-817-11	METAL CHIP	470	5%	1/10W
R5984	1-216-817-11	METAL CHIP	470	5%	1/10W
R5985	1-218-977-11	METAL CHIP	100K	5%	1/16W
R5986	1-218-977-11	METAL CHIP	100K	5%	1/16W

• EXCEPT J MODEL

Checking supplied accessories.

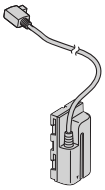
to J MODEL

Note : This item is supplied with the unit as an accessory, but is not prepared as a service part.

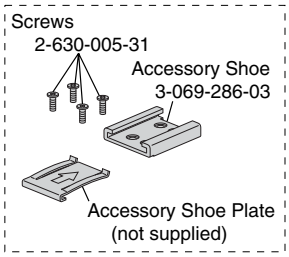


AC Adaptor/Charger
(AC-VQ1050)
⚠ 1-479-580-12

Power cord (mains lead)
⚠ 1-790-107-61 (Z5U)
⚠ 1-832-121-31 (Z5C)
⚠ 1-834-482-21 (Z5N/Z5E/Z5P)

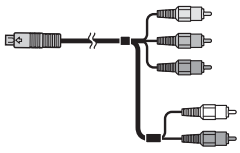


Connecting Cord
(DK-415)
1-782-361-15



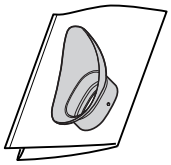
Accessory Shoe Kit
X-2188-877-2

Wireless Remote Commander
(RMT-831)
1-478-495-41

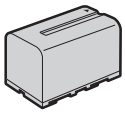


Component A/V cable
1-834-646-11

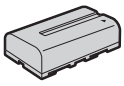
A/V connecting cable
1-823-156-61



Large eyecup
X-2342-702-1

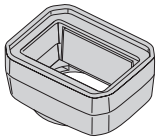


Rechargeable battery pack
(NP-F770)
(Only for models HVR-Z5U)
(Note)

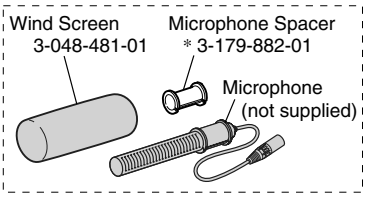


Rechargeable battery pack
(NP-F570)
(Only for models HVR-Z5C/Z5E/Z5N/Z5P)
(Note)

Conversion (2P) Adaptor
⚠ 1-569-008-12 (Z5N)

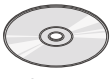


Lens hood with lens cover
X-2320-850-1



Wind Screen, Microphone
(ECM-XM1)
1-542-749-11

Operating Guide
4-114-857-11 (ENGLISH) (Z5N/Z5U)
4-114-858-11 (ENGLISH) (Z5E/Z5P)
4-114-858-21 (SIMPLIFIED CHINESE) (Z5C)



CD-ROM “Manuals for
Digital HD Video
Camera Recorder”
4-114-855-01

Operating Guide
(PDF)

The CD-ROM supplied contains all of language version of the Operating Guide for printing.

- The printed matter is not supplied. If required, please order it with the part number below.

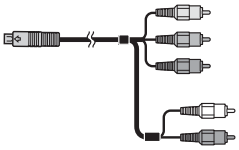
4-114-857-01 (JAPANESE)
4-114-857-11 (ENGLISH)
* 4-114-857-21 (FRENCH)

4-114-858-11 (ENGLISH)
4-114-858-21 (SIMPLIFIED CHINESE)
* 4-114-858-31 (FRENCH)
* 4-114-858-41 (SPANISH)
* 4-114-858-51 (ITALIAN)
* 4-114-858-61 (GERMAN)

• Refer to page 5-1 for mark ⚠.

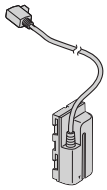
• J MODEL
付属品

ワイヤレスリモコン
(RMT-831)
1-478-495-41

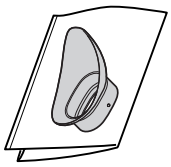


コンポーネントA/Vケーブル
1-834-646-11

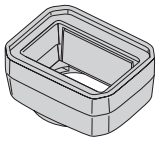
A/V接続ケーブル
1-823-156-61



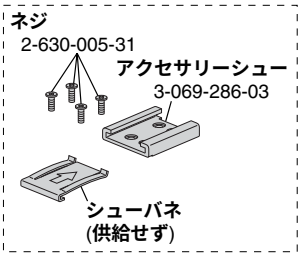
接続コード
(DK-415)
1-782-361-15



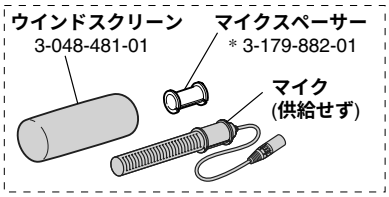
大型アイカップ
X-2342-702-1



レンズカバー付きフード
X-2320-850-1

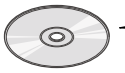


アクセサリーシューキット
X-2188-877-2



ウインドスクリーン，マイク
(ECM-XM1)
1-542-749-11

取扱説明書
4-114-857-01 (**日本語**)



CD-ROM
「Manuals for Digital HD Video Camera Recorder」
4-114-855-01

取扱説明書 (PDF)

取扱説明書.pdf**は全ての言語が付属品の**CD-ROM**に含まれています。**
CD-ROM**内の取扱説明書**(PDF)**につきましては印刷しての供給は対応しておりません。**

6. ADJUSTMENTS

Link

- Before starting adjustments
  - Adjusting items when replacing main parts and boards
  - List of service tools
- CAMERA SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - INITIALIZATION OF EVR DATA
  - CAMERA SYSTEM ADJUSTMENTS
  - ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
  - LCD SYSTEM ADJUSTMENTS
- MECHANISM SECTION ADJUSTMENTS
  - PREPARATIONS FOR CHECK, ADJUSTMENT AND REPLACEMENT OF MECHANISM BLOCK
  - PERIODIC INSPECTION AND MAINTENANCE
  - CHECK, ADJUSTMENT AND REPLACEMENT OF MECHANICAL PARTS
  - ADJUSTMENT
- VIDEO SECTION ADJUSTMENTS
  - PREPARATIONS BEFORE ADJUSTMENTS
  - SYSTEM CONTROL SYSTEM ADJUSTMENTS
  - SERVO AND RF SYSTEM ADJUSTMENTS
  - VIDEO SYSTEM ADJUSTMENTS
  - AUDIO SYSTEM ADJUSTMENTS
- SERVICE MODE
  - ADJUSTMENT REMOTE COMMANDER (RM-95)
  - ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)
  - DATA PROCESS
  - SERVICE MODE

SECTION 6
ADJUSTMENTS

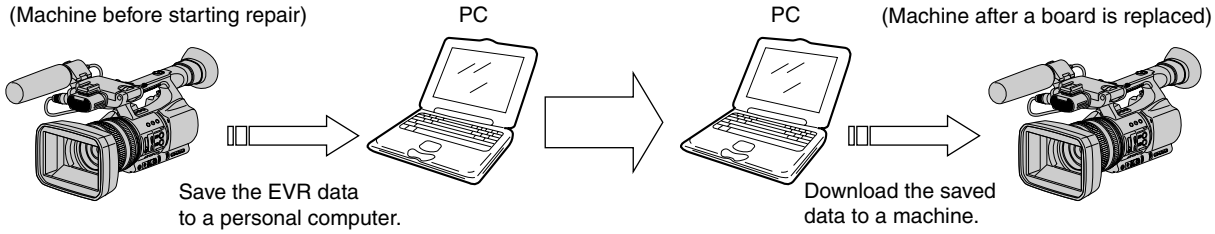
1. Before starting adjustments

EVR Data Re-writing Procedure When Replacing Board

The data that is stored in the repair board, is not necessarily correct.
Perform either procedure 1 or procedure 2 or procedure 3 when replacing board.

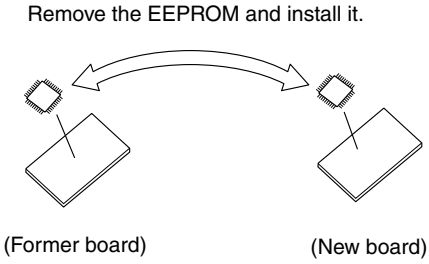
Procedure 1

Save the EVR data of the machine in which a board is going to be replaced. Download the saved data after a board is replaced.



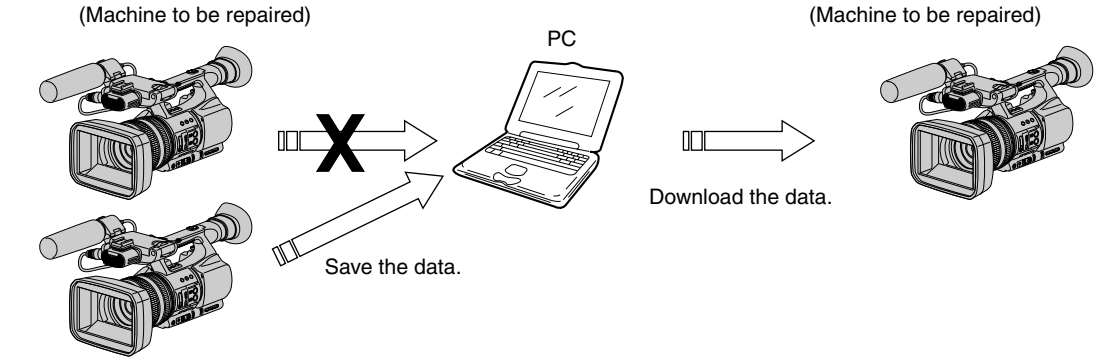
Procedure 2

Remove the EEPROM from the board of the machine that is going to be repaired. Install the removed EEPROM to the replaced board.



Procedure 3

When the data cannot be saved due to defective EEPROM, or when the EEPROM cannot be removed or installed, save the data from the same model of the same destination, and download it.



After the EVR data is saved and downloaded, check the respective items of the EVR data.
(Refer to page 6-3 for the items to be checked)

1-1. Adjusting items when replacing main parts and boards

• Adjusting items when replacing main parts

When replacing main parts, adjust the items indicated by ● in the following table.

Note 1: When replacing the drum assy or the mechanism deck, reset the data of page: 7, address: A8 to AB to "00". (Refer to "Record of Use check" of "6-4. SERVICE MODE")

Note 2: If the lens is broken, it must be replace with the already adjusted lens.

Adjustment Section	Adjustment	Replaced part																			
		Block replacement								Mounted part replacement											
		Lens Block (Note 2)	PRISM device (Including CM-097 and CM-104 board and CMOS imager (IC3001/IC5001))	LCD block LCD901 (3.2 inch wide color LCD unit)	LCD block D901 (BACKLIGHT)	EVF block LCD902 (Color EVF unit)	Mechanism deck (Note 1)	Mechanism deck M901 (DRUM MOTOR) (Note 1)	Mechanism deck MD block	GY-014 board SE8501, 8502 (PITCH, YAW sensor)	VC-543 board X1401 (Oscillator)	VC-543 board IC1401 (Camera signal processor)	VC-543 board IC1801 (Base band signal processor, etc.)	VC-543 board IC2601 (DV signal processor, etc.)	VC-543 board IC2002 (Video out AMP)	VC-543 board IC2001 (Component out AMP)	MD-141 board IC5201 (REC/PB AMP)	VF-178 board IC6201 (EVF drive, etc.)	PD-372 board IC6001 (LCD drive, etc.)
Initialization of EVR data	Initialization of A, B, D, 1A, 1B page data																				
	Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E page data																				
	Initialization of camera control page data																				
Camera	Origin oscillation check										●										
	PSD sensor adj.									●											
	Lens adj.	●	●																		
	MR sensor (Focus/Zoom Ring) adj.	●																			
	Coaxial harness connecting check		●																		
	Flange back adj.	●	●																		
	Black balance adj.	●	●									●									
	Auto white balance standard data input	●	●									●									
	LV standard data input	●	●									●									
	STD GAIN adj.	●	●									●									
	MAX GAIN adj.	●	●																		
	Linear matrix adj.	●	●									●									
	Auto white balance adj.	●	●									●									
	Color reproduction adj.	●	●									●									
	White defect adj.	●	●																		
	Black defect adj.	●	●																		
	Angular velocity sensor sensitivity adj.									●											
EVF	EVF gain adj.																		●		
LCD	PANEL gain adj.												●								●
	V-COM adj.			●																	
	Transmissive mode white balance adj.			●	●																●
Mechanism	Tape path adj.						●	●	●												
System control	Node unique ID No. input																				
Servo, RF	CAP FG duty adj.						●		●												
	Switching position adj.						●	●	●												
	SD Error rate check						●	●	●					●				●			
Video	S VIDEO OUT Y level adj.												●		●						
	S VIDEO OUT chroma level adj.												●		●						
	VIDEO OUT level check												●		●						
	COMPONENT OUT Y level adj.												●			●					
	COMPONENT OUT Pr level adj.												●			●					
	COMPONENT OUT Pb level adj.												●			●					

Table 6-1-1 (1)

• Adjusting items when replacing a board or EEPROM

When replacing a board or EEPROM, adjust the items indicated by ● in the following table.

Adjustment Section	Adjustment	Replaced part: GY-014 board (COMPLETE)	VC-543 board (COMPLETE)	MD-141 board (COMPLETE)	VF-178 board (COMPLETE)	PD-372 board (COMPLETE)	VC-543 board IC3805 (EEPROM)	VC-543 board IC4203 (EEPROM)	Supporting RadarW
Initialization of EVR data	Initialization of A, B, D, 1A, 1B page data		●				●		
	Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E page data		●						
	Initialization of camera control page data		●					●	
Camera	Origin oscillation check		●						
	PSD sensor adj.		●						●
	Lens adj.		●						●
	MR sensor (Focus/Zoom Ring) adj.		●						●
	Coaxial harness connecting check		●						●
	Flange back adj.		●						
	Black balance adj.		●						●
	Auto white balance standard data input		●						●
	LV standard data input		●						●
	STD GAIN adj.		●						●
	MAX GAIN adj.		●						●
	Linear matrix adj.		●						●
	Auto white balance adj.		●						●
	Color reproduction adj.		●						●
	White defect adj.		●						●
	Black defect adj.		●						●
	Angular velocity sensor sensitivity adj.	●	●						
EVF	EVF gain adj.		●		●				●
LCD	PANEL gain adj.		●			●			●
	V-COM adj.		●						
	Transmissive mode white balance adj.		●			●			
Mechanism	Tape path adj.								
System control	Node unique ID No. input		●						
Servo, RF	CAP FG duty adj.		●	●					●
	Switching position adj.		●	●					●
	SD Error rate check		●	●					●
Video	S VIDEO OUT Y level adj.		●						
	S VIDEO OUT chroma level adj.		●						
	VIDEO OUT level check		●						
	COMPONENT OUT Y level adj.		●						
	COMPONENT OUT Pr level adj.		●						
	COMPONENT OUT Pb level adj.		●						

Table 6-1-1 (2)

Note 3: IC2402, IC3804 (Flash memories) on the VC-543 board cannot be replaced.

1-2. List of service tools

- Oscilloscope
- Color monitor
- Regulated power supply
- Digital voltmeter
- Frequency counter
- Audio level meter
- Balanced audio generator
- Calculating machine capable of calculating hexadecimal numbers

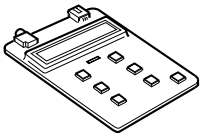
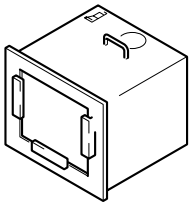
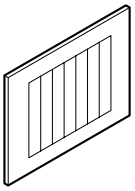
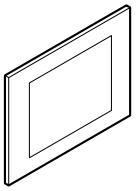
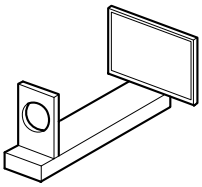
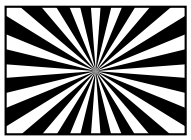
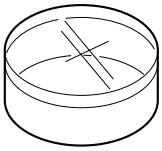
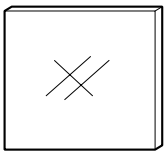
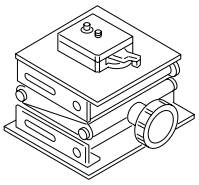
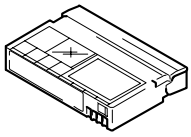
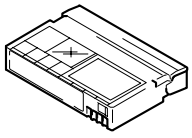
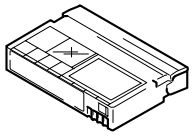
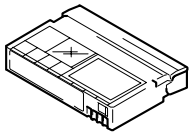
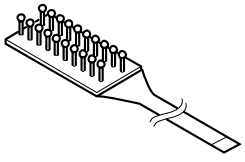
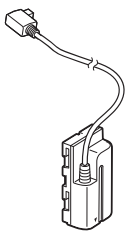
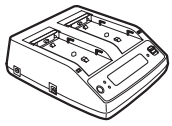
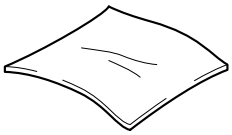
J-1 Adjustment remote commander (RM-95) J-6082-053-B	J-2  Adjustment remote commander (NEW LANC JIG) J-6082-565-A	J-3 LANC cable J-6082-442-A
J-4  Small pattern box PTB-1450 J-6082-557-A	J-5  Color bar chart For PTB-1450: J-6082-559-A	J-6  Clear chart For PTB-1450: J-6082-560-A
J-7  Flange back adjustment jig J-6082-563-A	J-8  Siemens star chart J-6080-875-A	J-9  Filter for color temperature correction (C14) J-6080-058-A
J-10  ND filter 1.0 J-6080-808-A ND filter 0.4 J-6080-806-A ND filter 0.1 J-6080-807-A	J-11  Camera table J-6082-384-A	J-12  Tracking standard (XH2-1A1) 8-967-999-03
J-13  SW/OL standard (XH2-3) 8-967-997-11	J-14 Audio operation check  for NTSC (XH5-3) 8-967-997-51 for PAL (XH5-3P) 8-967-997-55	J-15 System operation check  for NTSC (XH5-5) 8-967-997-61 for PAL (XH5-5P) 8-967-997-66
J-16  CPC-13 jig J-6082-443-A	J-17  Connecting Cord (DK-415) 1-782-361-15	J-18  AC Adaptor/Charger (AC-VQ1050) 1-479-580-12

Fig. 6-1-1 (1)

J-19

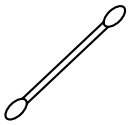
Head cleaning liquid
9-919-573-01

J-20



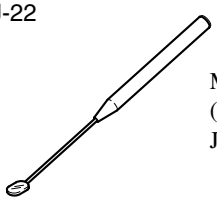
Wiping cloth
7-741-900-53

J-21



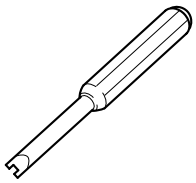
Super fine applicator
(made by Nippon
Applicator (P752D))

J-22



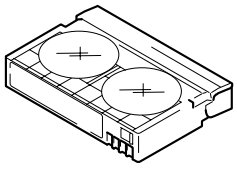
Mirror
(Small oval type)
J-6080-840-A

J-23



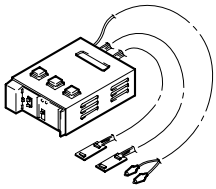
Screw driver for
the tape path
J-6082-026-A

J-24



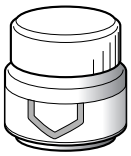
Mini DV
torque cassette
J-6082-360-A

J-25



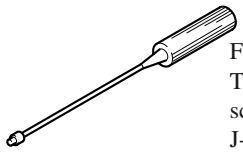
Mode Selector II
J-6082-282-B

J-26



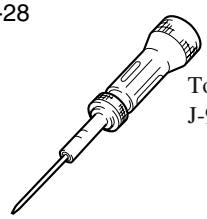
Suncall Grease
(FG-87HSR)
7-640-006-08

J-27



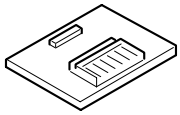
FWD/BACK
T adjustment
screwdriver
J-6082-364-A

J-28



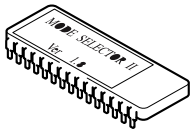
Torque screwdriver
J-9049-330-A

J-29



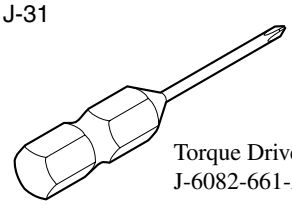
Mode Selector II
conversion board (N)
J-6082-567-A

J-30



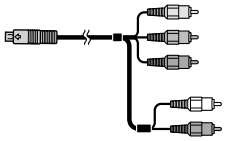
Mode Selector II
ROM (Note 1)
J-6082-314-G

J-31



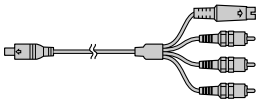
Torque Driver Bit (#0)
J-6082-661-A

J-32



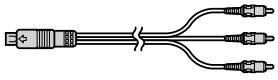
Component A/V Cable
1-834-646-11

J-33



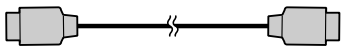
A/V Connecting Cable (1.5 m)
(with S Video terminal)
(1-823-156-13)

J-34



A/V Connecting Cable
1-823-156-61

J-35



HDMI Cable
(Optional)

Fig. 6-1-1 (2)

Note 1: This is the ROM used for upgrading the version of Mode Selector II to enable it to be used for the N mechanism. Set the indication to "Z" when using the mode selector II.

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS (CAMERA SECTION)

1-1-1. Preparations

Note: Before perform the adjustment, check that the data of page:
0, address: 10 is “00”.
If not, select page: 0, address: 10, and set data “00”.

1) Connect the equipment for adjustments according to Fig. 6-1-2.

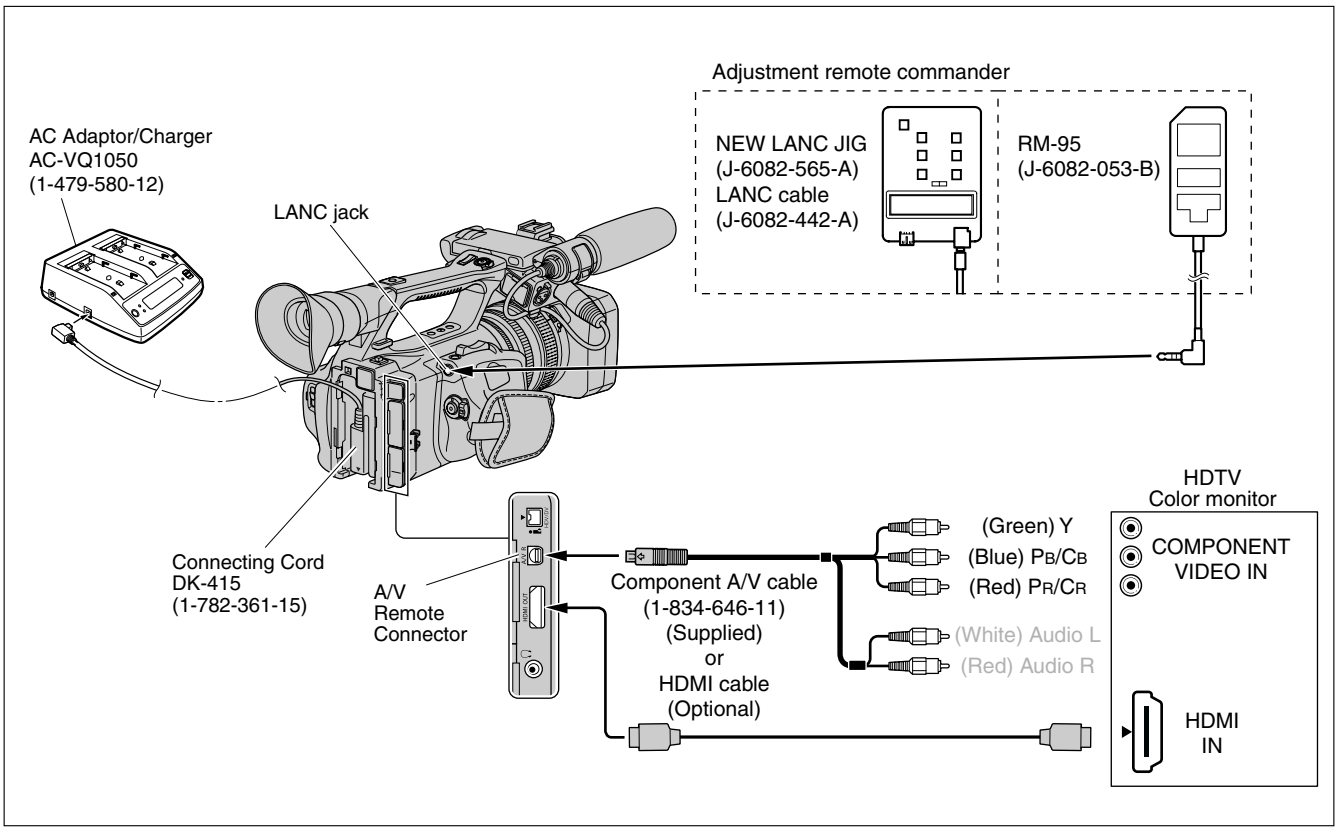


Fig. 6-1-2

1-1-3. Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. CAMERA/VCR switch ..... CAMERA
2. FOCUS switch ..... AUTO
3. ND FILTER ..... OFF
4. SHUTTER SPEED ..... AUTO
5. MENU settings
   - CAMERA SET menu
     - BACK LIGHT ..... OFF
     - SPOT LIGHT ..... OFF
     - D. EXTENDER ..... OFF
   - IN/OUT REC menu
     - REC FORMAT HDV1080i

2. Order of Adjustments

Basically carry out adjustments in the order given.

Color bar chart (Color reproduction adjustment frame)

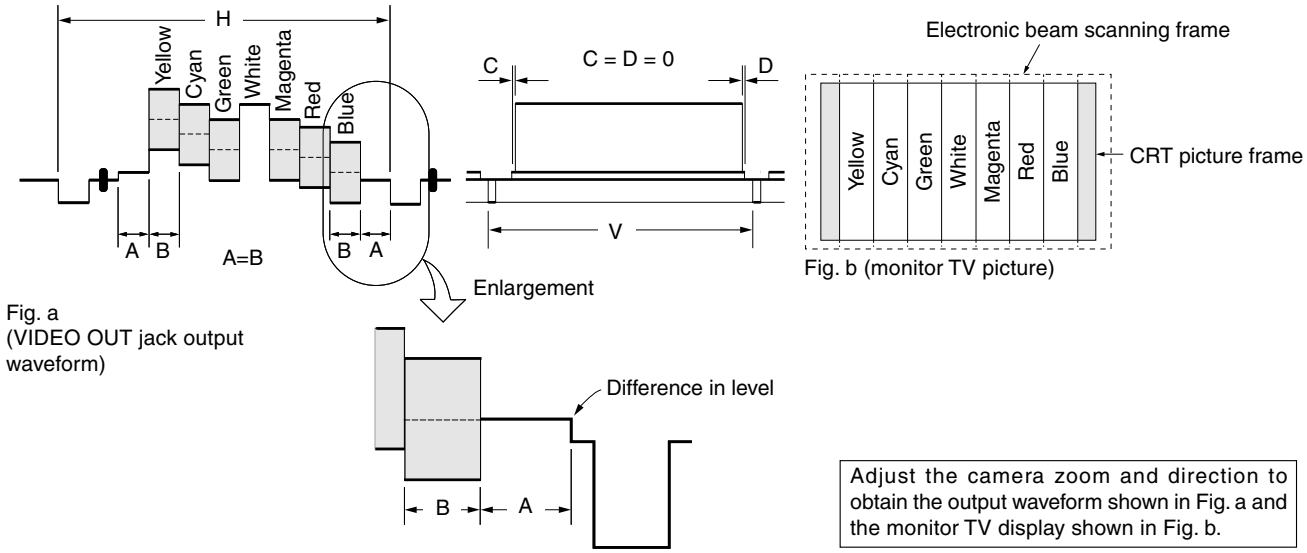


Fig. 6-1-3

3. Subjects

1) Color bar chart (Color reproduction adjustment frame)
   When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-3. (Color reproduction adjustment frame)
2) Clear chart (Color reproduction adjustment frame)
   Remove the color bar chart from the pattern box and insert a clear chart in its place. (Do not perform zoom operations during this time)

4. Setting Distance between Pattern Box and Camera

Set the distance from the front of the lens to the pattern box as shown in Fig. 6-1-4.

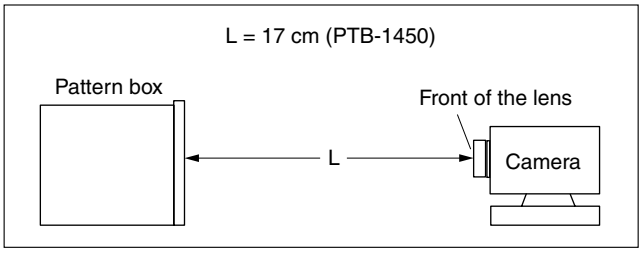
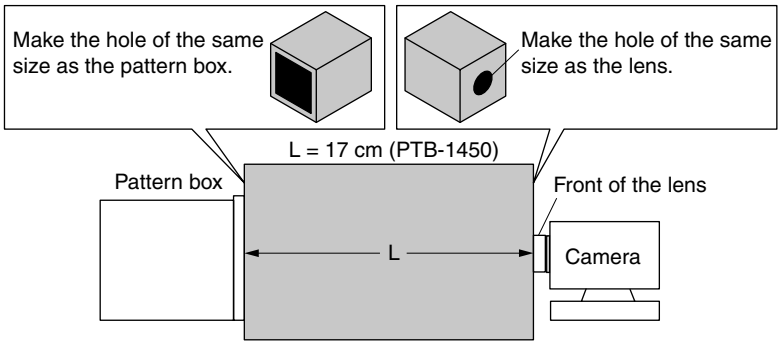


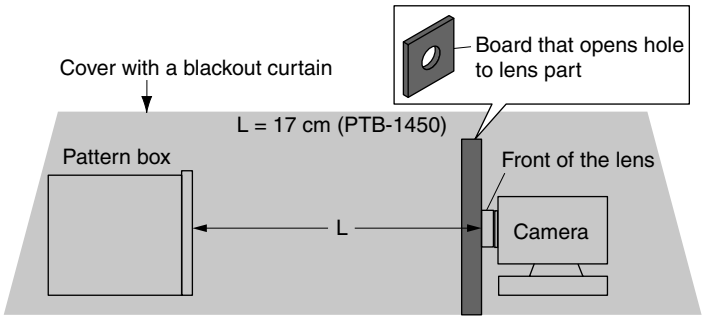
Fig. 6-1-4

5. Precautions When Using Pattern Box

1) It takes about 30 minutes for pattern box to stabilize its brightness.
   Turn on the pattern box 30 minutes before the adjustment starts.
2) Make arrangement so that the outside light does not enter the chart surface in the pattern box.
   Also, place a board between chart and camera, and make a hole at the lens part of the board so that the camera is not reflected in the shot image screen.
   (Adjustment may not be performed correctly due to the influence of outside light.)
   Example 1: Place a box to block a section between pattern box and camera.


Make the hole of the same size as the pattern box.
Make the hole of the same size as the lens.
L = 17 cm (PTB-1450)
Pattern box
Front of the lens
L
Camera

Example 2: Place a board having a hole in front of the camera and cover the pattern box and camera with a blackout curtain



3) Control of color chart
   The color chart will fade if it is exposed to direct sunlight or strong light.
   Since the fading of color chart progresses even with the light in the pattern box, remove and store the color chart when it is not used.
   Remove the color chart and store it.
   Store the color chart in a place not exposed to direct light, avoiding high temperature and humidity.
   Use the color chart for about three years, and afterward replace it with a new chart.

1-2. INITIALIZATION OF EVR DATA

Note 1: Pages used for the EVR consists of 45 pages. There are 8, 9, A, B, C, D, 13, 18, 1A, 1B, 1C, 1D, 1E, 6D, 6E, 6F, 7C, 7E, 7F, 8C, 8D, 8E, 8F, 9D, 9E, 9F, AD, AE, AF, BE, BF, C2, C3, C4, C5, C6, C7, C8, C9, CA, CB, CC, CD, CE, CF, pages.

Note 2: If 2-digit page is selected, set higher-order digit to page: 0, address: 10 as data, and then select lower-order digit by a usual method.
e.g.: Set data: 06 to page: 0, address: 10, and then select page: D. Thus, the page 6D can be selected.

1-2-1. Initialization of A, B, D, 1A, 1B Page Data

Note: Check that the data of page: 0, address: 10 is "00".

1. Initializing of A, B, D, 1A, 1B Page Data

Note: If the A, B, D, 1A, 1B page data has been initialized, the following adjustments need to be performed again.
1) Modification of A, B, D, 1A, 1B page data
2) Level vial adjustment

Adjustment Page	A
Adjustment Address	10 to FF
Adjustment Page	B
Adjustment Address	00 to FF
Adjustment Page	D
Adjustment Address	10 to FF
Adjustment Page	1A
Adjustment Address	00 to FF
Adjustment Page	1B
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	2	EA		Check the bit1 value. 1: NTSC model 0: PAL model
4	7	04		Set the following data 10: NTSC model 11: PAL model
5	7	01		Set the following data 20: Initializing A page 21: Initializing B page 22: Initializing D page 23: Initializing 1A page 24: Initializing 1B page 25: Initializing A and 1A page 26: Initializing B and 1B page 28: Initializing A, B, D, 1A and 1B page
6	7	02	FF	
7	7	00	01	Press PAUSE (Write) button.
8	7	02		Check the data changes to "01".
9				Perform "Modification of A, B, D, 1A, 1B Page Data"

2. Modification of A, B, D, 1A, 1B Page Data

If the A, B, D, 1A, 1B page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If modification of data on pages A, B, D, set data: 00 to page: 0, address: 10, and then select pages A, B, D.
3) If modification of data on pages 1A, 1B, set data: 01 to page: 0, address: 10, and then select pages A, B.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
4) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note 1: If copy the data built in the different model, the camcorder may not operate.
5) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
6) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.

Processing after Completing Modification A, B, D, 1A, 1B page data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	2	00	29	Press PAUSE (Write) button.
3	2	01	29	Press PAUSE (Write) button.

Note 2: If following symptoms occur after completing of the "Modification A, B, D, 1A, 1B page data", check that the data of the "Fixed data-2" address of A, B, D, 1A, 1B page are same as those of same model of same destination.
1) The power is shut off so that unit cannot operate.

3. A Page table

Note 1: Check that the data of page: 0, address: 10 is"00".

Note 2: Fixed data-1: Initialized data. (Refer to"1. Initializing the A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to"2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10	00	00	Test mode
11 to 17			Fixed data-1 (Initialized data)
18			Fixed data-2
19 to EF			Fixed data-1 (Initialized data)
F0 to F3			Fixed data-2
F4, F5			Fixed data-1 (Initialized data)
F6 to FF			Fixed data-1 (Initialized data)

4. B Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to B0	Fixed data-1 (Initialized data)		
B1	Fixed data-2		
B2 to FF	Fixed data-1 (Initialized data)		

5. D Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10 to FF	Fixed data-1 (Initialized data)		

6. 1A Page table

Note 1: If reading/writing data on pages 1A, set data: 01 to page: 0, address: 10, and then select pages: A. By this data setting, the pages 1A can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

7. 1B Page table

Note 1: If reading/writing data on pages 1B, set data: 01 to page: 0, address: 10, and then select pages: B. By this data setting, the pages 1B can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the A, B, D, 1A, 1B Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of A, B, D, 1A, 1B Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

1-2-2. Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

1. Initializing of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

Note 1: If "Initialization of Pages 8, 9, C, 13, 18, 1C, 1D, 1E" is executed, all data on pages 8, 9, C, 13, 18, 1C, 1D, 1E are initialized. (Only an individual page cannot be initialized)

Note 2: If the 8, 9, C, 13, 18, 1C, 1D, 1E page data has been initialized, the following adjustments need to be performed again.
1) Modification of 8, 9, C, 13, 18, 1C, 1D, 1E page data
2) Electronic viewfinder system adjustments (if all areas were initialized)
3) LCD system adjustments (if all areas were initialized)
4) Node unique ID No. input (if all areas were initialized)
5) Servo, RF system adjustments (if all areas were initialized)
6) Video system adjustments (if all areas were initialized)

Adjustment Page	8
Adjustment Address	00 to FF
Adjustment Page	9
Adjustment Address	00 to FF
Adjustment Page	C
Adjustment Address	10 to FF
Adjustment Page	13
Adjustment Address	00 to FF
Adjustment Page	18
Adjustment Address	00 to FF
Adjustment Page	1C
Adjustment Address	00 to FF
Adjustment Page	1D
Adjustment Address	00 to FF
Adjustment Page	1E
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	81		Set the following data. (Note 3) 00: Initializing all areas 01: Initializing other than adjustment address
4	3	80	0C	Press PAUSE (Write) button.
5	3	80		Check the data changes to "1C".
6	3	91		Set the following data. (Note 3) 09: Initializing all areas 19: Initializing other than adjustment address
7	3	90	0C	Press PAUSE (Write) button.

Order	Page	Address	Data	Procedure
8	3	90		Check the data changes to "1C".
9				Perform "Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data"

Note 3: If other than adjustment address was initialized, the adjusted data is not initialized.

2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

If the 8, 9, C, 13, 18, 1C, 1D, 1E page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Processing before Modification 8, 9, C, 13, 18, 1C, 1D, 1E page data:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	71	01	Press PAUSE (Write) button.

Modifying Method:

1) If modification of data on pages 8, 9, C, set data: 00 to page: 0, address: 10, and then select pages 8, 9, C.
2) If modification of data on pages 13, 18, 1C, 1D, 1E, set data: 01 to page: 0, address: 10, and then select pages 3, 8, C, D, E. After the modification of data finished, return the data on page: 0, address: 10 to "00".
3) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
4) When changing the data, press the PAUSE (Write) button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
5) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table.
   If different, change them to the adjustment initial values.

Processing after Completing Modification 8, 9, C, 13, 18, 1C, 1D, 1E page data:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	3	70	10	Press PAUSE (Write) button.
4	3	70		Check the data changes to "11".
5	2	00	29	
6	2	01	29	Press PAUSE (Write) button.

3. 8 Page table

Note 1: Check that the data of page: 0, address: 10 is"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to F1	Fixed data-1 (Initialized data)		
F2	Fixed data-2		
F3 to FF	Fixed data-1 (Initialized data)		

4. 9 Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

5. C Page table

Note 1: Check that the data of page: 0, address: 10 is "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
10	EE	EE	Switching position adj.
11	00	00	
12	00	00	
13	00	00	
14, 15			Fixed data-1 (Initialized data)
16	E0	E0	CAP FG duty adj.
17 to 24			Fixed data-1 (Initialized data)
25	70	-	S VIDEO OUT Y level adj. (NTSC)/Fixed data-1 (PAL)
26	8A	-	S VIDEO OUT chroma level adj.
27	61	-	(NTSC)/Fixed data-1 (PAL)
28 to 7D			Fixed data-1 (Initialized data)
7E	-	70	Fixed data-1(NTSC)/S VIDEO OUT Y level adj. (PAL)
7F	-	8A	Fixed data-1(NTSC)/S VIDEO OUT
80	-	61	chroma level adj. (PAL)
81to 8B			Fixed data-1 (Initialized data)
8C	79	79	COMPONENT OUT Y level adj.
8D	31	31	COMPONENT OUT Pb level adj.
8E	32	32	COMPONENT OUT Pr level adj.
8F to A0			Fixed data-1 (Initialized data)
A1	70	70	V-COM adj. (LCD)
A2	20	20	Transmissive mode white balance
A3	20	20	adj. (LCD)
A4, A5			Fixed data-1 (Initialized data)
A6	80	80	PANEL gain adj.
A7	80	80	
A8	80	80	
A9	80	80	EVF gain adj.
AA	80	80	
AB	80	80	
AC	37	37	EVF gain adj.
AD	37	37	
AE	37	37	
AF	37	37	PANEL gain adj.
B0	37	37	
B1	37	37	
B2	00	00	Error rate check
B3	00	00	
B4	00	00	
B5	00	00	
B6	00	00	
B7	80	80	
B8	00	00	
B9	00	00	
BA	00	00	
BB	00	00	
BC	00	00	
BD	00	00	
BE	00	00	
BF	00	00	
C0	00	00	
C1	00	00	
C2	80	80	Error rate check
C3	00	00	
C4	00	00	
C5	00	00	
C6	00	00	
C7	00	00	
C8 to F3			Fixed data-1 (Initialized data)
F4	00	00	Emergence memory address (Mechanism section)
F5	00	00	
F6	00	00	
F7	00	00	
F8	00	00	
F9	00	00	
FA	00	00	
FB	00	00	
FC	00	00	
FD	00	00	
FE	00	00	
FF	00	00	

6. 13 Page table

Note 1: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark	
	NTSC	PAL		
00 to 03	Fixed data-1 (Initialized data)			
04	08	08	Node unique ID No. input	
05	00	00		
06	46	46		
07	01	01		
08	02	02		
09	00	00		
0A	00	00		
0B	00	00		
0C	48	48		
0D	56	56		
0E	52	52		
0F	2D	2D		
10	5A	5A		
11	35	35		
12	55	-	Z5U	Model Name (SDD data)
	4E	50	Z5N, Z5P	
	-	45	Z5E	
	-	43	Z5C	
13	00	00		
14	00	00		
15	00	00		
16	00	00		
17	00	00		
18 to 23	Fixed data-1 (Initialized data)			
24	01	01		
25	81	-	Z5U	Module No.
	82	84	Z5N, Z5P	
	-	83	Z5E	
	-	85	Z5C	
26 to FF	Fixed data-1 (Initialized data)			

7. 18 Page table

Note 1: If reading/writing data on pages 18, set data: 01 to page: 0, address: 10, and then select pages: 8. By this data setting, the pages 18 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to DD	Fixed data-1 (Initialized data)		
DE	Fixed data-2		
DF to FF	Fixed data-1 (Initialized data)		

8. 1C Page table

Note 1: If reading/writing data on pages 1C, set data: 01 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 1C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to"00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

9. 1D Page table

Note 1: If reading/writing data on pages 1D, set data: 01 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 1D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

10. 1E Page table

Note 1: If reading/writing data on pages 1E, set data: 01 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 1E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")
Fixed data-2: Modified data. (Refer to "2. Modification of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 83	Fixed data-1 (Initialized data)		
84, 85	Fixed data-2		
86 to FF	Fixed data-1 (Initialized data)		

1-2-3. Initialization of Camera Control Page Data

1. Initializing of Camera Control Page Data

Note 1: If "Initialization of Camera Control Page Data" is executed, all data on camera control page are initialized. (Only an individual page cannot be initialized)

Note 2: If the camera control page data has been initialized, the following adjustments need to be performed again.
1) Modification of camera control page data
2) Camera system adjustment (if all areas were initialized)

Adjustment Page	6D
Adjustment Address	00 to F9
Adjustment Page	6E
Adjustment Address	00 to FF
Adjustment Page	6F
Adjustment Address	10 to FF
Adjustment Page	7C
Adjustment Address	00 to FF
Adjustment Page	7E
Adjustment Address	00 to FF
Adjustment Page	7F
Adjustment Address	00 to FF
Adjustment Page	8C
Adjustment Address	00 to F9
Adjustment Page	8D
Adjustment Address	00 to FF
Adjustment Page	8E
Adjustment Address	00 to FF
Adjustment Page	8F
Adjustment Address	00 to FF
Adjustment Page	9D
Adjustment Address	00 to 4F
Adjustment Page	9E
Adjustment Address	00 to FF
Adjustment Page	9F
Adjustment Address	00 to FF
Adjustment Page	AD
Adjustment Address	00 to 4F
Adjustment Page	AE
Adjustment Address	00 to F1
Adjustment Page	AF
Adjustment Address	00 to FF
Adjustment Page	BE
Adjustment Address	00 to F9
Adjustment Page	BF
Adjustment Address	00 to FF
Adjustment Page	C2
Adjustment Address	00 to FF
Adjustment Page	C3
Adjustment Address	00 to FF
Adjustment Page	C4
Adjustment Address	00 to FF
Adjustment Page	C5
Adjustment Address	00 to FF

Adjustment Page	C6
Adjustment Address	00 to DF
Adjustment Page	C7
Adjustment Address	00 to FF
Adjustment Page	C8
Adjustment Address	00 to FF
Adjustment Page	C9
Adjustment Address	00 to FF
Adjustment Page	CA
Adjustment Address	00 to FF
Adjustment Page	CB
Adjustment Address	00 to DF
Adjustment Page	CC
Adjustment Address	00 to C7
Adjustment Page	CD
Adjustment Address	00 to FF
Adjustment Page	CE
Adjustment Address	00 to FF
Adjustment Page	CF
Adjustment Address	00 to FF

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	00	
3	2	EA		Check the bit1 value. 1: NTSC model 0: PAL model
4	6	01		Set the following data, and press PAUSE (Write) button. (Note 3) NTSC model: 2D: Initializing all areas 31: Initializing other than adjustment address PAL model: 2F: Initializing all areas 33: Initializing other than adjustment address
5	6	03	01	Press PAUSE (Write) button.
6	6	02		Check the data changes to "01".
7	6	01	00	Press PAUSE (Write) button.
8	7	01	CF	
9	7	04		Set the following data, and press PAUSE (Write) button. 00: NTSC model 01: PAL model
10	7	00	01	Press PAUSE (Write) button.
11				Set the LANC mode switch of LANC jig in the order "SENSOR" to "NORMAL" to "SENSOR". (NTSC/PAL mode is going to be exchanged.)
12	2	EA		Check the bit1 value. 1: NTSC mode 0: PAL mode
13	6	01		Set the following data, and press PAUSE (Write) button. (Note 3) NTSC mode: 2D: Initializing all areas 31: Initializing other than adjustment address PAL mode: 2F: Initializing all areas 33: Initializing other than adjustment address
14	6	03	01	Press PAUSE (Write) button.
15	6	02		Check the data changes to "01".
16	6	01	00	Press PAUSE (Write) button.
17	7	01	CF	
18	7	04		Set the following data, and press PAUSE (Write) button. 00: NTSC mode 01: PAL mode
19	7	00	01	Press PAUSE (Write) button.
20				Set the LANC mode switch of LANC jig in the order "SENSOR" to "NORMAL" to "SENSOR". (NTSC/PAL mode is going to be exchanged.)
21	0	10	7	
22	2 (72)	01		Set the following data, and press PAUSE (Write) button. 2D: Initializing all areas 31: Initializing other than adjustment address
23	2 (72)	02		Check the data changes to "01".
24	2 (72)	01	00	Press PAUSE (Write) button.
25	0	10	00	
26				Perform "Modification of Camera Control Data".

Note 3: If other than adjustment address was initialized, the adjusted data is not initialized.

Note 4: NTSC model: HVR-Z5J/Z5N/Z5U
PAL model: HVR-Z5C/Z5E/Z5P

2. Modification of Camera Control Page Data

If the camera control page data has been initialized, change the data of the "Fixed data-2" address shown in the following table by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) If 2-digit page is selected, set higher-order digit to page: 0, address: 10 as data, and then select lower-order digit by a usual method.
   e.g.: Set data: 06 to page: 0, address: 10, and then select page: D. Thus, the page 6D can be selected.
   After the modification of data finished, return the data on page: 0, address: 10 to "00".
3) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.
   Note: If copy the data built in the different model, the camcorder may not operate.
4) When changing the data, press the PAUSE button of the adjustment remote commander each time when setting new data to write the data in the non-volatile memory.
5) If all areas were initialized, check that the data at the addresses for adjustment are initial values (adjustment initial values) listed in the table. If different, change them to the adjustment initial values.
6) Select page: 0, address: 01, set data: 01.
7) Select page: 3, address: 71, set data: 01, and press PAUSE (Write) button.

Processing after Completing Modification Camera Control Data:

Order	Page	Address	Data	Procedure
1	0	10	00	
2	3	70	10	Press PAUSE (Write) button.
3	3	70		Check the data changes to "11".
4	2	00	29	
5	2	01	29	Press PAUSE (Write) button.

3. 6D Page table

Note 1: If reading/writing data on pages 6D, set data: 06 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 6D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 59	Fixed data-1 (Initialized data)		
5A	00	00	STD gain adj.
5B	Fixed data-1 (Initialized data)		
5C	36	36	LV Standard data input
5D	10	10	
5E	0B	0B	MAX gain adj.
5F	6E	6E	
60 to F9	Fixed data-1 (Initialized data)		

4. 6E Page table

Note 1: If reading/writing data on pages 6E, set data: 06 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 6E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

5. 6F Page table

Note 1: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
10 to FF	Fixed data-1 (Initialized data)		

6. 7C Page table

Note 1: If reading/writing data on pages 7C, set data: 07 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 7C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

7. 7E Page table

Note 1: If reading/writing data on pages 7E, set data: 07 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 7E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

8. 7F Page table

Note 1: If reading/writing data on pages 7F, set data: 07 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 7F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00	80	80	
01	80	80	
02	02	02	
03	C2	C2	
04	02	02	
05	C2	C2	
06	00	00	
07	00	00	
08	00	00	
09	00	00	
0A	00	00	
0B	00	00	
0C	00	00	
0D	00	00	
0E	00	00	
0F	00	00	PSD Sensor Gradient Adjustment
10	00	00	
11	00	00	
12	00	00	
13	00	00	
14	00	00	
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C	00	00	
1D	00	00	
1E	00	00	
1F	00	00	
20	60	60	Angular Velocity Sensor Sensitivity Adjustment
21	60	60	
22 to 7F	Fixed data-1 (Initialized data)		

9. 8C Page table

Note 1: If reading/writing data on pages 8C, set data: 08 to page: 0, address: 10, and then select pages: C. By this data setting, the pages 8C can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 45	Fixed data-1 (Initialized data)		
46	Fixed data-2		
47 to DE	Fixed data-1 (Initialized data)		
DF	Fixed data-2		
E0	Fixed data-1 (Initialized data)		
E1	Fixed data-2		
E2 to F9	Fixed data-1 (Initialized data)		

10. 8D Page table

Note 1: If reading/writing data on pages 8D, set data: 08 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 8D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

11. 8E Page table

Note 1: If reading/writing data on pages 8E, set data: 08 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 8E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 08	Fixed data-1 (Initialized data)		
09 to 0E	Fixed data-2		
0F, 10	Fixed data-1 (Initialized data)		
11 to 16	Fixed data-2		
17, 18	Fixed data-1 (Initialized data)		
19 to 1C	Fixed data-2		
1D	Fixed data-1 (Initialized data)		
1E	Fixed data-2		
1F, 20	Fixed data-1 (Initialized data)		
21 to 24	Fixed data-2		
25	Fixed data-1 (Initialized data)		
26	Fixed data-2		
27, 28	Fixed data-1 (Initialized data)		
29 to 2C	Fixed data-2		
2D	Fixed data-1 (Initialized data)		
2E	Fixed data-2		
2F to 38	Fixed data-1 (Initialized data)		
39 to 3E	Fixed data-2		
3F, 40	Fixed data-1 (Initialized data)		
41 to 44	Fixed data-2		
45 to 48	Fixed data-1 (Initialized data)		
49	Fixed data-2		
4A to 50	Fixed data-1 (Initialized data)		
51	Fixed data-2		
52 to 58	Fixed data-1 (Initialized data)		
59	Fixed data-2		
5A to 66	Fixed data-1 (Initialized data)		
67	Fixed data-2		
68 to 7E	Fixed data-1 (Initialized data)		
7F	Fixed data-2		
80 to FF	Fixed data-1 (Initialized data)		

12. 8F Page table

Note 1: If reading/writing data on pages 8F, set data: 08 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 8F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00	Fixed data-1 (Initialized data)		
01 to 05	Fixed data-2		
06 to 08	Fixed data-1 (Initialized data)		
09	Fixed data-2		
0A to 0F	Fixed data-1 (Initialized data)		
10	Fixed data-2		
11, 12	Fixed data-1 (Initialized data)		
13	Fixed data-2		
14 to 32	Fixed data-1 (Initialized data)		
33	Fixed data-2		
34	Fixed data-1 (Initialized data)		
35	Fixed data-2		
36 to 38	Fixed data-1 (Initialized data)		
39	Fixed data-2		
3A	Fixed data-1 (Initialized data)		
3B	Fixed data-2		
3C to 77	Fixed data-1 (Initialized data)		
78 to 7A	Fixed data-2		
7B to 7D	Fixed data-1 (Initialized data)		
7E, 7F	Fixed data-2		
80 to 8F	Fixed data-1 (Initialized data)		
90, 91	Fixed data-2		
92 to A3	Fixed data-1 (Initialized data)		
A4, A5	Fixed data-2		
A6 to C1	Fixed data-1 (Initialized data)		
C2	Fixed data-2		
C3 to E1	Fixed data-1 (Initialized data)		
E2	Fixed data-2		
E3	Fixed data-1 (Initialized data)		
E4, E5	Fixed data-2		
E6 to FF	Fixed data-1 (Initialized data)		

13. 9D Page table

Note 1: If reading/writing data on pages 9D, set data: 09 to page: 0, address: 10, and then select pages: D. By this data setting, the pages 9D can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 4F	Fixed data-1 (Initialized data)		

14. 9E Page table

Note 1: If reading/writing data on pages 9E, set data: 09 to page: 0, address: 10, and then select pages: E. By this data setting, the pages 9E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

15. 9F Page table

Note 1: If reading/writing data on pages 9F, set data: 09 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 9F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

16. AD Page table

Note 1: If reading/writing data on pages AD, set data: 0A to page: 0, address: 10, and then select pages: D. By this data setting, the pages AD can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 4F	Fixed data-1 (Initialized data)		

17. AE Page table

Note 1: If reading/writing data on pages AE, set data: 0A to page: 0, address: 10, and then select pages: E. By this data setting, the pages AE can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 7B	Fixed data-1 (Initialized data)		
7C, 7D	Fixed data-2		
7E to F1	Fixed data-1 (Initialized data)		

18. AF Page table

Note 1: If reading/writing data on pages AF, set data: 0A to page: 0, address: 10, and then select pages: F. By this data setting, the pages AF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

19. BE Page table

Note 1: If reading/writing data on pages BE, set data: 0B to page: 0, address: 10, and then select pages: E. By this data setting, the pages BE can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to CA	Fixed data-1 (Initialized data)		
CB to D0	Fixed data-2		
D1 to F9	Fixed data-1 (Initialized data)		

20. BF Page table

Note 1: If reading/writing data on pages BF, set data: 0B to page: 0, address: 10, and then select pages: F. By this data setting, the pages BF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 44	Fixed data-1 (Initialized data)		
45	Fixed data-2		
46 to 63	Fixed data-1 (Initialized data)		
64 to 6A	Fixed data-2		
6B to BC	Fixed data-1 (Initialized data)		
BD	Fixed data-2		
BE to FF	Fixed data-1 (Initialized data)		

21. C2 Page table

Note 1: If reading/writing data on pages C2, set data: 0C to page: 0, address: 10, and then select pages: 2. By this data setting, the pages C2 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

22. C3 Page table

Note 1: If reading/writing data on pages C3, set data: 0C to page: 0, address: 10, and then select pages: 3. By this data setting, the pages C3 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

23. C4 Page table

Note 1: If reading/writing data on pages C4, set data: 0C to page: 0, address: 10, and then select pages: 4. By this data setting, the pages C4 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

24. C5 Page table

Note 1: If reading/writing data on pages C5, set data: 0C to page: 0, address: 10, and then select pages: 5. By this data setting, the pages C5 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

25. C6 Page table

Note 1: If reading/writing data on pages C6, set data: 0C to page: 0, address: 10, and then select pages: 6. By this data setting, the pages C6 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to DF	Fixed data-1 (Initialized data)		

26. C7 Page table

Note 1: If reading/writing data on pages C7, set data: 0C to page: 0, address: 10, and then select pages: 7. By this data setting, the pages C7 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

27. C8 Page table

Note 1: If reading/writing data on pages C8, set data: 0C to page: 0, address: 10, and then select pages: 8. By this data setting, the pages C8 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the Camera Control Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of Camera Control Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

28. C9 Page table

Note 1: If reading/writing data on pages C9, set data: 0C to page: 0, address: 10, and then select pages: 9. By this data setting, the pages C9 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the Camera Control Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of Camera Control Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

29. CA Page table

Note 1: If reading/writing data on pages CA, set data: 0C to page: 0, address: 10, and then select pages: A. By this data setting, the pages CA can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the Camera Control Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of Camera Control Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to FF	Fixed data-1 (Initialized data)		

30. CB Page table

Note 1: If reading/writing data on pages CB, set data: 0C to page: 0, address: 10, and then select pages: B. By this data setting, the pages CB can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the Camera Control Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of Camera Control Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to DF	Fixed data-1 (Initialized data)		

31. CC Page table

Note 1: If reading/writing data on pages CC, set data: 0C to page: 0, address: 10, and then select pages: C. By this data setting, the pages CC can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 2: Fixed data-1: Initialized data. (Refer to “1. Initializing the Camera Control Data”)
Fixed data-2: Modified data. (Refer to “2. Modification of Camera Control Data”)

Address	Initial value		Remark
	NTSC	PAL	
00 to C7	Fixed data-1 (Initialized data)		

32. CD Page table

Note 1: If reading/writing data on pages CD, set data: 0C to page: 0, address: 10, and then select pages: D. By this data setting, the pages CD can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 11	Fixed data-1 (Initialized data)		
12	Fixed data-2		
13 to 1C	Fixed data-1 (Initialized data)		
1D	Fixed data-2		
1E to 2F	Fixed data-1 (Initialized data)		
30 to 32	Fixed data-2		
33	Fixed data-1 (Initialized data)		
34, 35	Fixed data-2		
36	Fixed data-1 (Initialized data)		
37 to 3A	Fixed data-2		
3B	Fixed data-1 (Initialized data)		
3C, 3D	Fixed data-2		
3E	Fixed data-1 (Initialized data)		
3F	Fixed data-2		
40 to 4F	Fixed data-1 (Initialized data)		
50	Fixed data-2		
51 to 53	Fixed data-1 (Initialized data)		
54 to 57	Fixed data-2		
58 to 87	Fixed data-1 (Initialized data)		
88 to 95	Fixed data-2		
96 to 99	Fixed data-1 (Initialized data)		
9A to A3	Fixed data-2		
A4, A5	Fixed data-1 (Initialized data)		
A6 to AB	Fixed data-2		
AC, AD	Fixed data-1 (Initialized data)		
AE to B3	Fixed data-2		
B4, B5	Fixed data-1 (Initialized data)		
B6 to B9	Fixed data-2		
BA to BE	Fixed data-1 (Initialized data)		
BF	Fixed data-2		
C0 to C2	Fixed data-1 (Initialized data)		
C3	Fixed data-2		
C4	Fixed data-1 (Initialized data)		
C5	Fixed data-2		
C6	Fixed data-1 (Initialized data)		
C7	Fixed data-2		
C8	Fixed data-1 (Initialized data)		
C9	Fixed data-2		
CA	Fixed data-1 (Initialized data)		
CB	Fixed data-2		
CC	Fixed data-1 (Initialized data)		
CD	Fixed data-2		
CE	Fixed data-1 (Initialized data)		
CF	Fixed data-2		
D0 to FF	Fixed data-1 (Initialized data)		

33. CE Page table

Note 1: If reading/writing data on pages CE, set data: 0C to page: 0, address: 10, and then select pages: E. By this data setting, the pages CE can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 03	Fixed data-1 (Initialized data)		
04	Fixed data-2		
05 to 0F	Fixed data-1 (Initialized data)		
10 to 13	Fixed data-2		
14 to 1D	Fixed data-1 (Initialized data)		
1E, 1F	Fixed data-2		
20 to 22	Fixed data-1 (Initialized data)		
23, 24	Fixed data-2		
25	Fixed data-1 (Initialized data)		
26	Fixed data-2		
27 to 2A	Fixed data-1 (Initialized data)		
2B, 2C	Fixed data-2		
2D	Fixed data-1 (Initialized data)		
2E to 31	Fixed data-2		
32	Fixed data-1 (Initialized data)		
33	Fixed data-2		
34	Fixed data-1 (Initialized data)		
35, 36	Fixed data-2		
37 to 3A	Fixed data-1 (Initialized data)		
3B, 3C	Fixed data-2		
3D to 5C	Fixed data-1 (Initialized data)		
5D	Fixed data-2		
5E to 79	Fixed data-1 (Initialized data)		
7A to 7D	Fixed data-2		
7E to 83	Fixed data-1 (Initialized data)		
84, 85	Fixed data-2		
86 to 91	Fixed data-1 (Initialized data)		
92, 93	Fixed data-2		
94 to 97	Fixed data-1 (Initialized data)		
98 to 9D	Fixed data-2		
9E	Fixed data-1 (Initialized data)		
9F	Fixed data-2		
A0 to C1	Fixed data-1 (Initialized data)		
C2 to C5	Fixed data-2		
C6 to EE	Fixed data-1 (Initialized data)		
EF	Fixed data-2		
F0 to FF	Fixed data-1 (Initialized data)		

34. CF Page table

Note 1: If reading/writing data on pages CF, set data: 0C to page: 0, address: 10, and then select pages: F. By this data setting, the pages CF can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Fixed data-1: Initialized data. (Refer to "1. Initializing the Camera Control Data")
Fixed data-2: Modified data. (Refer to "2. Modification of Camera Control Data")

Address	Initial value		Remark
	NTSC	PAL	
00 to 8F	Fixed data-1 (Initialized data)		
90 to 9F	Fixed data-2		
A0 to B0	Fixed data-1 (Initialized data)		
B1 to BD	Fixed data-2		
BE	Fixed data-1 (Initialized data)		
BF	Fixed data-2		
C0 to C7	Fixed data-1 (Initialized data)		
C8 to CF	Fixed data-2		
D0 to E8	Fixed data-1 (Initialized data)		
E9	Fixed data-2		
EA	Fixed data-1 (Initialized data)		
EB to EF	Fixed data-2		
F0 to FF	Fixed data-1 (Initialized data)		

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, check that the specified values of "VIDEO SYSTEM ADJUSTMENTS" are satisfied. (Except Origin Oscillation Check")
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

1-3-1. Camera System Adjustments

1. Origin Oscillation Check (VC-543 board)

Check the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Subject	Not required
Measurement Point	R1414 (CHCK) on VC-543 board
Measuring Instrument	Frequency counter
Specified value	f = 41538461 ± 835 Hz (NTSC) f = 41580000 ± 835 Hz (PAL)

Switch setting

1) POWER ..... CAMERA mode

Checking method:

1) Check that the frequency (f) satisfies the specified value.

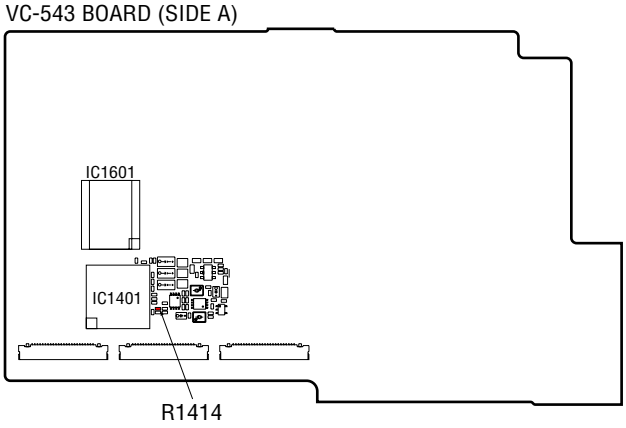


Fig. 6-1-5

2. Coaxial Harness Connecting Check RadarW

Check if the coaxial harness of CMOS is connected correctly.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6
Adjustment Address	D1 to D6
Specified value	Data of page: 6, address: D0 is "07"

Note 1: Check that the data of page: 6, address: 02 is "00"
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	07		Check the data is "04".
3	0	10	09	
4	E (9E)	90	10	
5	E (9E)	80	00	
6	0	10	00	
7	6	01	EB	Press PAUSE (Write) button.(Note 2)
8	6	02		Check the data changes to "01".
9	6	D0		Check the data is "07". (Note 3)

Note 2: The adjustment data will be automatically input to page: 6, address: D1 to D6.

Note 3: For the error codes of bit 0 to bit 2 of data of page: 6, address: D0, see the following table.

Bit value of data of page: 6, address: D0		Error contents	
Bit	Function	When bit value = 0	When bit value = 1
0	R	Error exists	No error
1	G	Error exists	No error
2	B	Error exists	No error

Example: If an error exists in G, data is "05"

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	10	09	
3	E (9E)	90	00	
4	E (9E)	80	70	
5	0	10	00	
6	0	01	00	

3. PSD Sensor Gradient Adjustment (VC-543 board) RadarW

Input average offset voltage of the YAW (SE8502)/PITCH (SE8501) sensors on GY-014 board.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	7F
Adjustment Address	00 to 1F
Specified value	Data of page: 72, address: 02 is “01”

Note 1: Set the camera on a horizontal table.
Note 2: Check that the data of page: 72, address: 02 is “00”
If not, select page: 72, address: 01, set data: 00, and press the PAUSE (Write) button.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	7	
3	2 (72)	01	97	Press PAUSE (Write) button. (Note 3)
4				Wait for 6 seconds.
5	2 (72)	02		Check the data changes to “01”. (Note 4)
6	F (7F)	16		Check the data changes to “11”.
7	2 (72)	01	00	Press PAUSE (Write) button.
8	0	10	00	
9	0	01	00	

Note 3: The adjustment data will be automatically input to page: 7F, address: 00 to 1F.
Note 4: If the data is other than “01”, adjustment has errors. Contents of error is written into page: 7, address: 02. See the following table.

Data of page: 7F, address: 16	Error contents
X, Y = 0	In the middle of adjustment
X, Y = 2	Abnormal termination
X, Y = 1	Normal termination

“X, Y”: X: High 4 bits (Yaw sensor)
Y: Low 4 bits (Pitch sensor)

4. Lens Adjustment RadarW

The inner focus lens MR adjustment is carried out automatically.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	30, 40 to 4F
Specified value	Data of page: 6, address: 0C is “00”

Note 1: Perform the adjustment with the lens in horizontal state.
Note 2: Perform “Flange Back Adjustment ” after this adjustment.
Note 3: If reading/writing data on page 6F, set data: 06 to page: 0, address: 10, and then select page F. By this data setting, the page 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Switch setting
1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is “00”. (Note 4)
3	6	01	BD	Press PAUSE (Write) button. (Note 5)
4	6	02		Check the data changes to “01”.
5	6	0C		Check the data is “00”.

Note 4: If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.
Note 5: The adjustment data will be automatically input to page: 6F, address: 30, 40 to 4F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	01	25	Press PAUSE (Write) button.
3	6	02		Check the data changes to “01”.
4	6	01	00	Press PAUSE (Write) button.
5	0	01	00	

5. Zoom Ring Adjustment (MR Sensor) RadarW

The manual zoom ring MR adjustment is carried out automatically.

Subject	Not required	
Measurement Point	Adjusting remote commander	
Measuring Instrument		
Adjustment Page	6D	6E
Adjustment Address	A9 to AC, AF	FC to FF

Note 1: Perform the adjustment with the lens in horizontal state.

Note 2: If reading/writing data on pages 6D, 6E, set data: 06 to page: 0, address: 10, and then select pages D, E. By this data setting, the pages 6D, 6E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00". (Note 3)
3				Turn the zoom ring manually in one direction slowly. It should be turning several times. Continue to turn till the end of adjustment.
4	6	01	5B	Press PAUSE (Write) button. (Note 4)
5	6	02		Check the data changes to "01".
6				Wait for 10 seconds.
7	6	0C		Check the data is "00".

Note 3: If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Note 4: The adjustment data will be automatically input to page: 6D, address: A9 to AC, AF and page: 6E, address: FC to FF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

6. Focus Ring Adjustment (MR Sensor) RadarW

The manual focus ring MR adjustment is carried out automatically.

Subject	Not required	
Measurement Point	Adjusting remote commander	
Measuring Instrument		
Adjustment Page	6D	6E
Adjustment Address	A5 to A8, AD to AF	FA, FB

Note 1: Perform the adjustment with the lens in horizontal state.

Note 2: If reading/writing data on pages 6D, 6E, set data: 06 to page: 0, address: 10, and then select pages D, F. By this data setting, the pages 6D, 6E can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00". (Note 3)
3				Turn the focus ring manually in one direction slowly. It should be turning several times. Continue to turn till the end of adjustment.
4	6	01	59	Press PAUSE (Write) button. (Note 4)
5	6	02		Check the data changes to "01".
6				Wait for 10 seconds.
7	6	0C		Check the data is "00".

Note 3: If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Note 4: The adjustment data will be automatically input to page: 6D, address: A5 to A8, AD to AF and page: 6E, address: FA, FB.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

7. Flange Back Adjustment
(Using the minipattern box or flange back adjustment jig)

[Preparation (Using the minipattern box)]

1) The minipattern box is installed as shown in the following figure.
   Note: The attachment lenses are not used.
2) Install the minipattern box so that the distance between it and the front of lens of camera is less than 3 cm.
3) Make the height of minipattern box and the camera equal.
4) Check the output voltage of the regulated power supply is the specified voltage ± 0.01 Vdc.
5) Check that the center of Siemens star chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

Specified voltage: The specified voltage varies according to the minipattern box, so adjustment the power supply output voltage to the specified voltage written on the sheet which is supplied with the minipattern box.

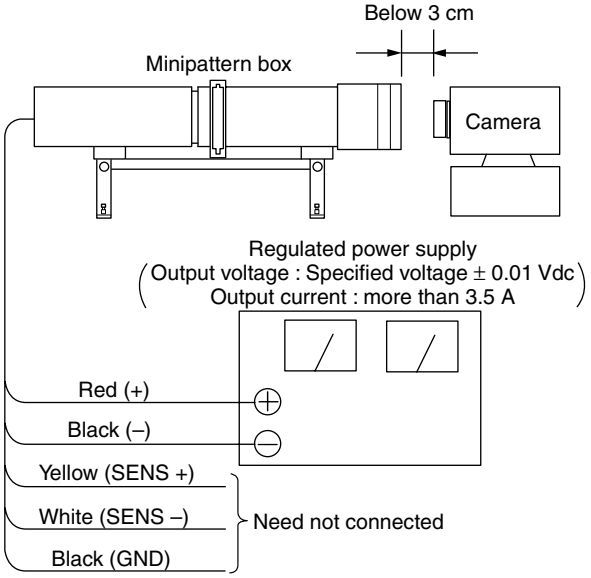


Fig. 6-1-6

[Preparation (Using the flange back adjustment jig)]
(Illuminance: 550 to 650 lux)

1) Install the flange back adjustment jig so that the distance between it and the front of lens of camera is less than 3 cm.
2) Make the height of flange back adjustment jig and the camera equal.
3) Check that the center of chart meets the center of shot image screen with the zoom lens at TELE end and WIDE end respectively.

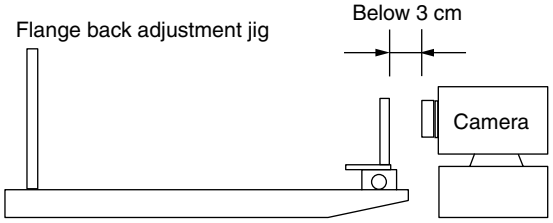


Fig. 6-1-7

7-1. Flange Back Adjustment RadarW
(Using the minipattern box or flange back adjustment jig)

Perform the flange back adjustment. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Subject	Siemens star chart for minipattern box (Note 1) or flange back adjustment jig
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	20 to 3F
Specified value	Data of page: 06, address: 0C is “00”

Note 1: Dark Siemens star chart.
Note 2: Perform “PSD Sensor Gradient Adjustment”, “Lens Adjustment”, “Zoom Ring Adjustment”, “Focus Ring Adjustment” after this adjustment.
Note 3: Perform the adjustment with the lens in horizontal state.
Note 4: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.
Note 5: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.
Note 6: Don't touch the zoom ring during adjustment.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	61	01	
3				Wait for 3 seconds.
4	0	10	09	
5	F (9F)	4A	83	
6	F (9F)	4B	80	(Note 10)
7	0	10	00	
8	6	02		Check the data is “00”.
9	6	99		Check the data is “00”.
10	6	4D	40	
11	6	64	04	
12	0	10	07	
13	E (7E)	10		Set the bit value of bit1 is “0”, and press PAUSE (Write) button. (Note 8)
14	0	10	00	
15	6	40	01	
16	6	01	13	Press PAUSE (Write) button.
17				Wait for 1 seconds.
18	6	01	27	Press PAUSE (Write) button.
19	6	02		Check the data changes to “01”.
20	6	0C		Check the data is “00”.

Note 7: After adjustment, if the focusing to a subject located at infinity failed, increase the ilIlluminance of the chart and perform readjustment.

Note 8: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 9: The adjustment data will be automatically input to page: 6F, address: 20 to 3F.

Note 10: The center line portion of chart should be in the AF detection frame “A” at the TELE end.

AF Detection Frame Display

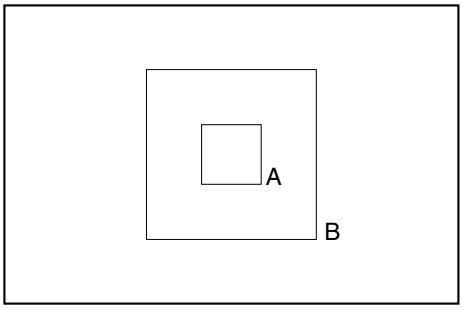


Fig. 6-1-8

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	64	00	
3	6	4D	00	
4	6	40	00	
5	0	10	07	
6	E (7E)	10		Set the bit value of bit1 is “1”, and press PAUSE (Write) button. (Note 7)
7	0	10	00	
8	6	61	00	
9				Wait for 3 seconds.
10	0	10	09	
11	F (9F)	4A	00	
12	F (9F)	4B	00	
13	0	10	00	
14	6	01	25	Press PAUSE (Write) button.
15	6	02		Check the data changes to “01”.
16	6	01	00	Press PAUSE (Write) button.
17	0	01	00	

7-2. Optical Axis Adjustment RadarW

Correct the disorder of the center axis of the optical system.

Adjustment Page	7F
Adjustment Address	30 to 3F

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 07.
3) Input the following data to page: F (7F), address: 30 to 3F.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
30	00
31	00
32	00
33	00
34	00
35	00
36	00
37	00
38	00
39	00
3A	00
3B	00
3C	00
3D	00
3E	00
3F	00

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

8. Flange Back Check (Using the flange back adjustment jig)

Subject	Flange back adjustment jig (Illuminance: approx. 300 ± 50 lux) (Used siemens star chart)
Measurement Point	Check operation on monitor TV
Measuring Instrument	(Note 2)
Specified value	Focused at the TELE end and WIDE end

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check with the monitor larger than 40 inches.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Shoot the chart with the zoom TELE end.
2	0	01	01	
3	6	01	00	Press PAUSE (Write) button.
4	6	61	01	
5				Wait for 3 seconds.
6	6	2C	02	
7	6	40	01	
8	6	41	01	
9	6	4D	40	
10	6	01	13	Press PAUSE (Write) button.
11				Wait for 1 second.
12				Check that the lens is focused while zooming from TELE end to WIDE end.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	2C	00	
3	6	40	00	
4	6	41	00	
5	6	4D	00	
6	6	61	00	
7				Wait for 3 seconds.
8	0	01	00	

9. Black Balance Adjustment RadarW

Adjust the black level.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6E
Adjustment Address	C6 to EF

Note 1: If reading/writing data on pages 6E, set data: 06 to page: 0, address: 10, and then select pages E. By this data setting, the pages 6E can be selected.

After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Check that the data of page: 6, address: 02 is "00"
If not, select page: 6, address: 01, set data: 00, and press the PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	01	BF	Press PAUSE (Write) button. (Note 3)
5	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: 6E, address: C6 to EF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

10. Picture Frame Setting (Color reproduction adjustment frame)

Subject	Color bar chart (Color reproduction adjustment frame) 17 cm (PTB-1450) from the front of lens)
Measurement Point	VIDEO OUT jack (75 Ω terminated)
Measuring Instrument	Oscilloscope and monitor TV (16:9)
Specified Value	A=B, C=D, E=F

Note 1: "Flange Back Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting

1) POWER ..... CAMERA mode
2) D.EXTENDER (Menu setting) ..... OFF
3) STEADY SHOT (Menu setting) ..... OFF
4) REC FORMAT (Menu setting) HDV1080i

Setting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	40	01	
3				Adjust the zoom and the camera direction, and set the specified position.
4				Mark the position of the picture frame on the monitor TV, and adjust the picture frame to this position in following adjustment using "Color reproduction adjustment frame".
5	0	10	00	

How to read the XH, XL, YH and YL data:

Order	Page	Address	Data	Procedure
1	0	03	18	
2	1			Read XH data and XL data. (Note 3)
3	0	03	22	
4	1			Read YH data and YL data. (Note 3)

Note 3: The right four digits of the page: 1 displayed data of the adjusting remote commander.

1:XX : XX
- XL or YL data
- XH or YH data

How to reset the zoom and focus when they deviated:
If the zoom and focus deviated due to some reason, reset them in the following method.

Order	Page	Address	Data	Procedure
1	6	40	01	
2	6	2C	01	
3	6	90	XL	
4	6	91	XH	
5	6	92	YL	
6	6	93	YH	
7	6	01	79	Press PAUSE (Write) button.

How to release the picture frame setting:

Order	Page	Address	Data	Procedure
1	6	40	01	
2	6	01	00	Press PAUSE (Write) button.
3	6	90	00	
4	6	91	00	
5	6	92	00	
6	6	93	00	
7	6	2C	00	
8	0	01	00	

Check on the oscilloscope

1. Horizontal period

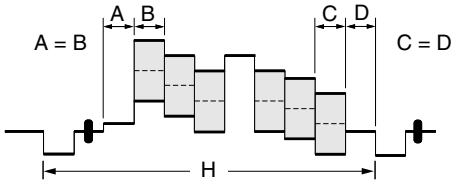


Fig. 6-1-9

2. Vertical period

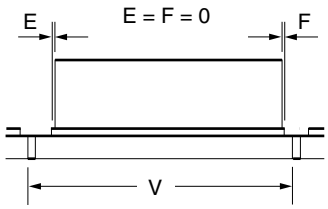


Fig. 6-1-10

Check on the monitor TV (Underscanned mode)

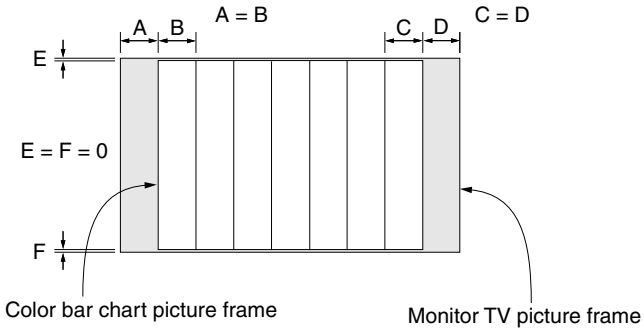


Fig. 6-1-11

11. Linear Matrix Adjustment RadarW

Adjust the matrix coefficient for compensating the variation in spectral sensitivity.

Adjustment Page	6D	6F
Adjustment Address	B0 to F7	60 to 71

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: B0 to F7 and page: F (6F), address: 60 to 71.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

6D page data:

Address	Data	Address	Data
B0	04	D4	05
B1	00	D5	04
B2	00	D6	FF
B3	00	D7	5A
B4	00	D8	00
B5	00	D9	1D
B6	00	DA	FF
B7	00	DB	AA
B8	04	DC	04
B9	00	DD	77
BA	00	DE	FF
BB	00	DF	92
BC	00	E0	FF
BD	00	E1	FA
BE	00	E2	FF
BF	00	E3	F4
C0	04	E4	04
C1	00	E5	1C
C2	04	E6	05
C3	00	E7	2A
C4	00	E8	FF
C5	00	E9	72
C6	00	EA	FF
C7	00	EB	D4
C8	00	EC	FF
C9	00	ED	90
CA	04	EE	04
CB	00	EF	CD
CC	00	F0	FF
CD	00	F1	1F
CE	00	F2	FF
CF	00	F3	F4
D0	00	F4	FF
D1	00	F5	ED
D2	04	F6	04
D3	00	F7	2C

6F page data:

Address	Data	Address	Data
60	20	69	00
61	00	6A	00
62	00	6B	00
63	00	6C	00
64	00	6D	00
65	00	6E	00
66	00	6F	00
67	00	70	20
68	20	71	00

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

12. Auto White Balance Standard Data Input RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Adjustment Page	6F
Adjustment Address	88 to 8B

Note 1: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is "00".
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	6	61	01	
6				Wait for 3 seconds.
7	6	40	01	
8	6	41	01	
9	6	01	0B	Press PAUSE (Write) button. (Note 3)
10	6	02		Check the data changes to "01".

Note 3: The adjustment data will be automatically input to page: 6F, address: 88 to 8B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	61	00	
5	0	01	00	

13. LV Standard Data Input RadarW

Adjust the normal coefficient of the light value at 3200K.

Adjustment Page	6D
Adjustment Address	5C, 5D

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 5C and 5D.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
5C	36
5D	2B

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

14. STD GAIN Adjustment RadarW

Correct a variation in the CMOS sensitivity setting.
As the CMOS sensitivity is dominant on the variation, correct it with the AGC_GAIN standard setting.

Adjustment Page	6D
Adjustment Address	5A

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 5A.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
5A	1E

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

15. MAX GAIN Adjustment RadarW

Correct a variation in the CMOS sensitivity setting.
As the CMOS sensitivity is dominant on the variation, correct it with the AGC_GAIN standard setting.

Adjustment Page	6D
Adjustment Address	5E, 5F

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 06.
3) Input the following data to page: D (6D), address: 5E and 5F.

Note: Press the PAUSE (Write) button of the adjustment remote commander each time to set data.

Address	Data
5E	0B
5F	6E

4) Select page: 0, address: 10, and set data: 00.
5) Select page: 0, address: 01, and set data: 00.

16. Auto White Balance Adjustment RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	84 to 87, 98 to 9B

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: If reading/writing data on page 6F, set data: 06 to page: 0, address: 10, and then select pages: D, F. By this data setting, the page 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "00".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	6	61	01	
7				Wait for 3 seconds.
8	6	40	01	
9	6	41	01	
10	0	10	06	
11	F (6F)	84	2A	Press PAUSE (Write) button.
12	F (6F)	85	E7	Press PAUSE (Write) button.
13	F (6F)	86	5B	Press PAUSE (Write) button.
14	F (6F)	87	5C	Press PAUSE (Write) button.
15	0	10	00	
16	6	01	81	Press PAUSE (Write) button. (Note 4)
17	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: 98 to 9B.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	61	00	
5	0	01	00	
6				Remove the C14 filter on the lens.

17. Auto White Balance Check RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input”, “LV Standard Data Input” and “Auto White Balance Adjustment” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “00”.
4	6	07		Check the data is “04”.
5	6	61	01	
6				Wait for 3 seconds.
7	6	40	01	
8	6	41	01	
9	6	CA	85	
10	6	C9	10	
OUTDOOR white balance check				
11	6	01	4F	Press PAUSE (Write) button.
12	6	02		Check the data changes to “01”.
13	6	0C		Check the data is “00”.
14	6	01	00	Press PAUSE (Write) button.
INDOOR white balance check				
15	6	01	0F	Press PAUSE (Write) button.
16	6	02		Check the data changes to “01”.
17	6	0C		Check the data is “00”.
18	6	01	00	Press PAUSE (Write) button.
19	6	61	00	
20				Wait for 3 seconds.
InOut check				
21				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
22	6	C9	11	
23	6	01	4B	Press PAUSE (Write) button.
24	6	02		Check the data changes to “01”.
25	6	0C		Check the data is “00”.
26	6	01	00	Press PAUSE (Write) button.
27				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
4	6	40	00	
6	6	41	00	
7	0	01	00	

18. Color Reproduction Adjustment RadarW

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	B0 to B7, A8 to AF
Specified Value	Data of page: 6 address: 0C is “00”

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Standard Data Input” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is “00”.
3	6	02		Check the data is “00”.
4	6	9B		Check the bit value of bit2 is “0”. (Note 4)
5	6	9B		Check the bit value of bit3 is “0”. (Note 4)
6	6	07		Check the data is “04”.
7	6	15	A0	
8	6	61	01	
9				Wait for 3 seconds.
10	6	40	01	
11	6	41	01	
12	6	C9	10	
13	6	CA	04	
14	6	D0	35	
15	6	01	61	Press PAUSE (Write) button. (Note 5)
16	6	02		Check the data changes to “01”.
17	6	0C		Check the data is “00”.

Note 4: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 5: The adjustment data will be automatically input to page: 6F, address: B0 to B7, A8 to AF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	C9	00	
3	6	CA	00	
4	6	40	00	
5	6	41	00	
6	6	15	00	
7	6	61	00	
8	0	01	00	

19. Color Reproduction Check (Outdoor) RadarW

Subject	Color bar chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is “00”.
4	6	02		Check the data is “00”.
5	6	9B		Check the bit value of bit2 is “0”. (Note 3)
6	6	9B		Check the bit value of bit3 is “0”. (Note 3)
7	6	07		Check the data is “04”.
8	6	15	A0	
9	6	61	01	
10				Wait for 3 seconds.
11	6	40	01	
12	6	41	01	
13	6	C9	10	
14	6	CA	04	
15	6	D0	35	
16	6	01	3D	Press PAUSE (Write) button.
17	6	02		Check the data changes to “01”.
18	6	0C		Check the data is “00”.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	C9	00	
3	6	CA	00	
4	6	40	00	
5	6	41	00	
6	6	15	00	
7	6	61	00	
8	0	01	00	
9				Remove the C14 filter on the lens.

20. Auto White Balance Standard Data Input (ND1) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	8C to 8F
Specified Value	Data of page: 6 address: 0C is "00"

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is "01".
3	6	02		Check the data is "00".
4	6	07		Check the data is "04".
5	6	61	01	
6				Wait for 3 seconds.
7	6	40	01	
8	6	41	01	
9	6	01	0B	Press PAUSE (Write) button. (Note 4)
10	6	02		Check the data changes to "01".
11	6	0C		Check the data is "00".

Note 4: The adjustment data will be automatically input to page: 6F, address: 8C to 8F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	61	00	
5	0	01	00	

21. Auto White Balance Adjustment (ND1) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	9C to 9F

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "01".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	6	40	01	
7	6	41	01	
8	6	01	81	Press PAUSE (Write) button. (Note 4)
9	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: 9C to 9F.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	0	01	00	
5				Remove the C14 filter on the lens.

22. Auto White Balance Check (ND1) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND1)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND1)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 1
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “01”.
4	6	07		Check the data is “04”.
5	6	61	01	
6				Wait for 3 seconds.
7	6	40	01	
8	6	41	01	
9	6	CA	85	
10	6	C9	10	
OUTDOOR white balance check				
11	6	01	4F	Press PAUSE (Write) button.
12	6	02		Check the data changes to “01”.
13	6	0C		Check the data is “00”.
14	6	01	00	Press PAUSE (Write) button.
INDOOR white balance check				
15	6	01	0F	Press PAUSE (Write) button.
16	6	02		Check the data changes to “01”.
17	6	0C		Check the data is “00”.
18	6	01	00	Press PAUSE (Write) button.
19	6	61	00	
20				Wait for 3 seconds.
InOut check				
21				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
22	6	C9	11	
23	6	01	4B	Press PAUSE (Write) button.
24	6	02		Check the data changes to “01”.
25	6	0C		Check the data is “00”.
26	6	01	00	Press PAUSE (Write) button.
27				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	6	40	00	
4	6	41	00	
5	0	01	00	

23. Auto White Balance Standard Data Input (ND2) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	90 to 93
Specified Value	Data of page: 6 address: 0C is “00”

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Standard Data Input” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is “02”.
3	6	02		Check the data is “00”.
4	6	07		Check the data is “04”.
5	6	40	01	
6	6	41	01	
7	6	01	0B	Press PAUSE (Write) button. (Note 4)
8	6	02		Check the data changes to “01”.
9	6	0C		Check the data is “00”.

Note 4: The adjustment data will be automatically input to page: 6F, address: 90 to 93.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	0	01	00	

24. Auto White Balance Adjustment (ND2) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	A0 to A3

Note 1: Perform “Linear Matrix Adjustment” and “Auto White Balance Adjustment” before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to “00”.

Note 3: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is “02”.
4	6	02		Check the data is “00”.
5	6	07		Check the data is “04”.
6	6	40	01	
7	6	41	01	
8	6	13	BF	
9	6	01	81	Press PAUSE (Write) button. (Note 4)
10	6	02		Check the data changes to “01”.

Note 4: The adjustment data will be automatically input to page: 6F, address: A0 to A3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	13	00	
5	0	01	00	
6				Remove the C14 filter on the lens.

25. Auto White Balance Check (ND2) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND2)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND2)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 2
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “02”.
4	6	07		Check the data is “04”.
5	6	40	01	
6	6	41	01	
7	6	CA	85	
8	6	C9	10	
OUTDOOR white balance check				
9	6	01	4F	Press PAUSE (Write) button.
10	6	02		Check the data changes to “01”.
11	6	0C		Check the data is “00”.
12	6	01	00	Press PAUSE (Write) button.
INDOOR white balance check				
13	6	01	0F	Press PAUSE (Write) button.
14	6	02		Check the data changes to “01”.
15	6	0C		Check the data is “00”.
16	6	01	00	Press PAUSE (Write) button.
InOut check				
17				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
18	6	C9	11	
19	6	13	BF	
20				Wait for 1 second.
21	6	01	4B	Press PAUSE (Write) button.
22	6	02		Check the data changes to “01”.
23	6	0C		Check the data is “00”.
24	6	01	00	Press PAUSE (Write) button.
25				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	6	40	00	
4	6	41	00	
5	6	13	00	
6	0	01	00	

26. Auto White Balance Standard Data Input (ND3) RadarW

Adjust the white balance reference at 3200K, and adjust the normal coefficient of the light value.

Subject	Clear chart (Color reproduction adjustment frame)
Measurement Point	Adjusting remote commander
Measuring Instrument	
Adjustment Page	6F
Adjustment Address	94 to 97
Specified Value	Data of page: 6 address: 0C is "00"

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Standard Data Input" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D.EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	99		Check the data is "03".
3	6	02		Check the data is "00".
4	6	07		Check the data is "04"."
5	6	40	01	
6	6	41	01	
7	6	13	BF	
8	6	01	0B	Press PAUSE (Write) button. (Note 4)
9	6	02		Check the data changes to "01".
10	6	0C		Check the data is "00".

Note 4: The adjustment data will be automatically input to page: 6F, address: 94 to 97.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	13	00	
5	0	01	00	

27. Auto White Balance Adjustment (ND3) RadarW

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color reproduction adjustment frame)
Filter	Filter C14 for color temperature correction
Adjustment Page	6F
Adjustment Address	A4 to A7

Note 1: Perform "Linear Matrix Adjustment" and "Auto White Balance Adjustment" before this adjustment.

Note 2: If reading/writing data on pages 6F, set data: 06 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 6F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 3: Check that the data of page: 6, address: 02 is "00". If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2	0	01	01	
3	6	99		Check the data is "03".
4	6	02		Check the data is "00".
5	6	07		Check the data is "04".
6	6	40	01	
7	6	41	01	
8	6	13	BD	
9	6	01	81	Press PAUSE (Write) button. (Note 4)
10	6	02		Check the data changes to "01".

Note 4: The adjustment data will be automatically input to page: 6F, address: A4 to A7.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	40	00	
3	6	41	00	
4	6	13	00	
5	0	01	00	
6				Remove the C14 filter on the lens.

28. Auto White Balance Check (ND3) RadarW

Subject	Clear chart (Color reproduction adjustment frame)
Filter	ND filter 1.0, 0.4 and 0.1
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified Value	Data of page: 6, address: 0C is “00”

Note 1: Perform “Auto White Balance Standard Data Input (ND3)”, “LV Standard Data Input” and “Auto White Balance Adjustment (ND3)” before this adjustment.

Note 2: Check that the data of page: 6, address: 02 is “00”. If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER 3
3) D. EXTENDER (Menu setting) ..... OFF
4) STEADY SHOT (Menu setting) ..... OFF
5) REC FORMAT (Menu setting) HDV1080i

Checking method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	9B		Check the bit value of bit2 is “0”. (Note 3)
3	6	99		Check the data is “03”.
4	6	07		Check the data is “04”.
5	6	40	01	
6	6	41	01	
7	6	CA	85	
8	6	C9	10	
9	6	13	BF	
OUTDOOR white balance check				
10	6	01	4F	Press PAUSE (Write) button.
11	6	02		Check the data changes to “01”.
12	6	0C		Check the data is “00”.
13	6	01	00	Press PAUSE (Write) button.
INDOOR white balance check				
14	6	01	0F	Press PAUSE (Write) button.
15	6	02		Check the data changes to “01”.
16	6	0C		Check the data is “00”.
17	6	01	00	Press PAUSE (Write) button.
InOut check				
18				Place the ND filter 1.5 (1.0 +0.4 + 0.1) on the lens.
19	6	C9	11	
20	6	13	BE	
21				Wait for 3 seconds.
22	6	01	4B	Press PAUSE (Write) button.
23	6	02		Check the data changes to “01”.
24	6	0C		Check the data is “00”.
25	6	01	00	Press PAUSE (Write) button.
26				Remove the ND filter 1.5 (1.0 + 0.4 + 0.1) on the lens.

Note 3: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	C9	00	
2	6	CA	00	
3	6	40	00	
4	6	41	00	
5	6	13	00	
6	0	01	00	

29. White Defect & HS Defect Adjustment RadarW

Detect white defective pixels of CMOS image sensor.

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified value	Data of page: 6 address: D3 is “00”

Note 1: Perform “STD GAIN Adjustment” before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is “00”.
Note 3: Check that the data of page: 6, address: 02 is “00”.
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Preparation for adjustment:

1) Before starting the adjustment, perform the aging to raise the temperature so that the set becomes ready for adjustment.

Aging temperature judge mode:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	09	
3	F (9F)	5D	1D	Press PAUSE (Write) button.
4				During the aging, the screen will be as follows. (Fig. 6-1-13)
5				When the aging completed, execute the subsequent steps to exit the aging temperature judge mode.
6	F (9F)	5D	00	Press PAUSE (Write) button.
7	0	10	00	
8	0	01	00	

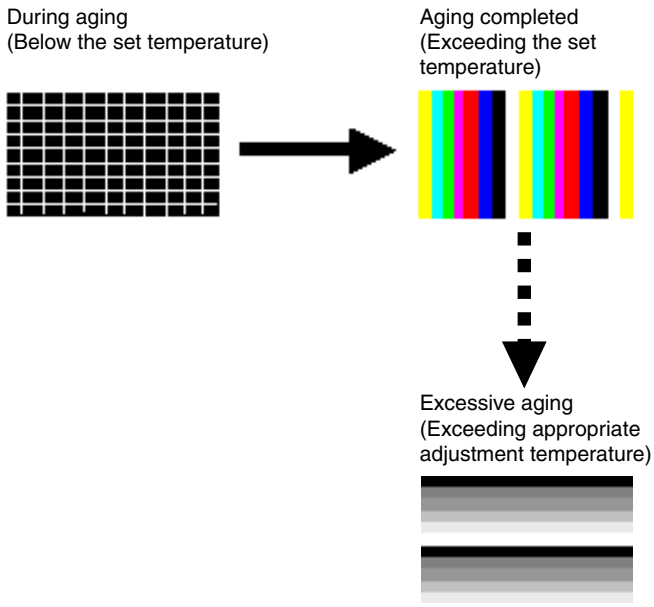


Fig.6-1-12

CMOS temperature checking method:

Order	Page	Address	Data	Procedure
1	0	FF	06	
2	7	78		Check the data is “00”.
3	7	79		Check the data is “1D” to “2A”. (Note 4)
4	0	FF	00	

Note 4: If the data is other than “1D” to “2A”, perform the aging.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is “00”.
3	6	07		Check the data is “04”.
4	6	D0	81	
5	6	01	21	Press PAUSE (Write) button.
6	6	02		Check the data changes to “01”.
7	6	01	00	Press PAUSE (Write) button.
8	6	D0	06	
9	6	01	21	Press PAUSE (Write) button.
10	6	02		Check the data changes to “01”.
11	6	D3		Check the data is “00”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

30. White Defect Adjustment RadarW

Detect white defective pixels (FD white point) of CMOS image sensor.

Subject	Not required

Note 1: Perform "White Defect & HS Defect Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	D0	0C	
5	6	01	21	Press PAUSE (Write) button.
6	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

31. White Defect Check RadarW

Subject	Not required
Measurement Point	Adjusting remote commander
Measuring Instrument	
Specified value 1	Data of page: 6 address: D1 is "00"
Specified value 2	Data of page: 6, address: D2 is "00" to "06"

Note 1: Perform "White Defect Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".
Note 3: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	D0	04	
5	6	01	21	Press PAUSE (Write) button.
6	6	02		Check the data changes to "01".
7	6	D1		Check the data is "00".
8	6	D2		Check the data is "00" to "06".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	0	01	00	

32. Black Defect Adjustment 1 (Bch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	99		Check the data is "00".
5	6	2C	01	
6	6	90	00	
7	6	91	04	
8	6	92	00	
9	6	93	10	
10	6	01	79	Press PAUSE (Write) button.
11				Wait for 4 seconds.
12	6	01	00	Press PAUSE (Write) button.
13				Check that the entire screen is white.
14	6	D0	01	
15	6	D1	01	
16	6	01	21	Press PAUSE (Write) button.
17	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	
6	6	01	79	Press PAUSE (Write) button.
7				Wait for 4 seconds.
8	6	01	00	Press PAUSE (Write) button.
9	6	2C	00	
10	0	01	00	

33. Black Defect Adjustment 2 (Gch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	99		Check the data is "00".
5	6	2C	01	
6	6	90	00	
7	6	91	04	
8	6	92	00	
9	6	93	10	
10	6	01	79	Press PAUSE (Write) button
11				Wait for 4 seconds.
12	6	01	00	Press PAUSE (Write) button.
13				Check that the entire screen is white.
14	6	D0	01	
15	6	D1	02	
16	6	01	21	Press PAUSE (Write) button.
17	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	
6	6	01	79	Press PAUSE (Write) button.
7				Wait for 4 seconds.
8	6	01	00	Press PAUSE (Write) button.
9	6	2C	00	
10	0	01	00	

34. Black Defect Adjustment 3 (Rch) RadarW

Detect black defective pixels of CMOS image sensor.

Subject	Clear chart (All white) (Note 1)

Note 1: Shoot the clear chart with the zoom TELE end.
Note 2: Perform "White Defect Check" before this adjustment.
Note 3: Check that the data of page: 0, address: 10 is "00".
Note 4: Check that the data of page: 6, address: 02 is "00".
If not, select page: 6, address: 01, set data: 00, and press PAUSE (Write) button.

Switch setting

1) POWER ..... CAMERA mode
2) ND FILTER ..... OFF
3) ZOOM switch (Lens block) ..... SERVO

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	6	02		Check the data is "00".
3	6	07		Check the data is "04".
4	6	99		Check the data is "00".
5	6	2C	01	
6	6	90	00	
7	6	91	04	
8	6	92	00	
9	6	93	10	
10	6	01	79	Press PAUSE (Write) button.
11				Wait for 4 seconds.
12	6	01	00	Press PAUSE (Write) button.
13				Check that the entire screen is white.
14	6	D0	01	
15	6	D1	04	
16	6	01	21	Press PAUSE (Write) button.
17	6	02		Check the data changes to "01".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	90	00	
3	6	91	00	
4	6	92	00	
5	6	93	00	
6	6	01	79	Press PAUSE (Write) button.
7				Wait for 4 seconds.
8	6	01	00	Press PAUSE (Write) button.
9	6	2C	00	
10	0	01	00	

35. Angular Velocity Sensor Sensitivity Adjustment

- Perform the angular velocity sensor sensitivity adjustment only when replacing the angular velocity sensor or lens block. When the microprocessor, circuit, etc. malfunctions, do not perform this adjustment but check operations only.
- Record the sensitivity label of the angular velocity sensor (repair part), including to which side of the board it was attached to, etc. If it has been attached incorrectly, the image will move up and down or to the left and right during steady shot operation. Be sure to take note of this.

Precautions on the Parts Replacement

There are two types of repair parts.

Type A ENC03RC – 04
Type B ENC03RD

Replace the broken sensor with a same type sensor. If replace with other type parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, readjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

35-1. Angular Velocity Sensor Sensitivity Adjustment (1)

Adjustment Page	7F (Note 1)
Adjustment Address	20

Note 1: If reading/writing data on pages 7F, set data: 07 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 7F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: The PITCH sensor (SE8501 of GY-014 board) sensitivity is labeled only the repair parts.

Preparation

1) Read the PITCH sensor (SE8501 of GY-014 board) sensitivity written on repair parts, and named this as S_{20}.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	07	
3				Calculate D_{20}' using following equations. (decimal calculation) (Note 3) $D_{20}' = 129 \times (60/S_{20})$
4				Convert D_{20}' to a hexadecimal number, and obtain D_{20}. (Note 4)
5	F (7F)	20	D_{20}	Press PAUSE (Write) button.
6	0	10	00	

Note 3: S_{20} is read in "Preparation".

Note 4: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Check that the steady shot function operates normally.

35-2. Angular Velocity Sensor Sensitivity Adjustment (2)

Adjustment Page	7F (Note 1)
Adjustment Address	21

Note 1: If reading/writing data on pages 7F, set data: 07 to page: 0, address: 10, and then select pages: F. By this data setting, the pages 7F can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

Note 2: The YAW sensor (SE8502 of GY-014 board) sensitivity is labeled only the repair parts.

Preparation

1) Read the YAW sensor (SE8502 of GY-014 board) sensitivity written on repair parts, and named this as S_{21}.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	07	
3				Calculate D_{21}' using following equations. (decimal calculation) (Note 3) $D_{21}' = 128 \times (60/S_{21})$
4				Convert D_{21}' to a hexadecimal number, and obtain D_{21}. (Note 4)
5	F (7F)	21	D_{21}	Press PAUSE (Write) button.
6	0	10	00	

Note 3: S_{21} is read in "Preparation".

Note 4: Refer to table 6-4-1. "Hexadecimal-decimal conversion table".

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	00	
2				Check that the steady shot function operates normally.

1-4. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

Before perform the viewfinder system adjustments, check the data of page: 0, address: 10 is “00”.
If not, select page: 0, address: 10, and set the data “00”.

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.

1. EVF Gain Adjustment (VF-178 board) RadarW

This adjustment does the following items automatically.
RGB Amp Adjustment
Contrast Adjustment

Mode	VTR stop (VCR mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	A9 to AE
Specified value	The data of page :3, address: 03 is “00”

Note 1: Check that the data of page: 0, address: 10 is “00”.

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	AF		Set the bit value of bit1 is “1”, and press PAUSE (Write) button. (Note 2)
5	8 (18)	AC	04	Press PAUSE (Write) button.
6	8 (18)	A3	44	Press PAUSE (Write) button.
7	0	10	00	
8	3	03	FF	Press PAUSE (Write) button.
9	3	01	6B	Press PAUSE (Write) button. (Note 3)
10	3	03		Check the data is "00". (Note 4)
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to “11”.
13	0	01	00	

Note 2: For the bit values, refer to “6-4. SERVICE MODE”, “4-4. 3. Bit value discrimination”.

Note 3: The adjustment data will be automatically input to page: C, address: A9 to AE.

Note 4: If the data is other than “00”, adjustment has errors. Contents of error is written into page: 3, address: 03. See the following table.

Data of page: 3, address: 03	Contents of error
81	EVF_G adjustment error
82	EVF_R adjustment error
83	EVF_B adjustment error.

1-5. LCD SYSTEM ADJUSTMENTS

Before perform the LCD system adjustments, check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

Note 1: Taken an extreme care not to destroy the liquid crystal display module by static electricity when replacing it.
Note 2: Set the "LCD BRIGHT", "LCD COLOR" to the center with the menu settings of the LCD panel.
Note 3: Open the LCD panel during the LCD system adjustment.

1. PANEL Gain Adjustment (PD-372 board) RadarW

This adjustment does the following items automatically.
RGB Amp Adjustment
Contrast Adjustment

Mode	VTR stop (VCR mode)
Signal	No signal
Adjustment Page	C
Adjustment Address	A6 to A8, AF to B1
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Switch setting:
VIDEO OUT ..... LCD
(Page: 7, address: 4F, Bit1 = 0)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	8 (18)	AF		Set the bit value of bit1 is "1", and press PAUSE (Write) button. (Note 2)
5	8 (18)	AC	04	Press PAUSE (Write) button.
6	8 (18)	A3	44	Press PAUSE (Write) button.
7	0	10	00	
8	3	03	FF	Press PAUSE (Write) button.
9	3	01	6A	Press PAUSE (Write) button. (Note 3)
10	3	03		Check the data is "00". (Note 4)
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to "11".
13	0	01	00	

Note 2: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".
Note 3: The adjustment data will be automatically input to page: C, address: A6 to A8, AF to B1.
Note 4: If the data is other than "00", adjustment has errors. Contents of error is written into page: 3, address: 03. See the following table.

Data of page: 3, address: 03	Contents of error
01	PANEL_G adjustment error
02	PANEL_R adjustment error
03	PANEL_B adjustment error

2. V-COM Adjustment (PD-372 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.
If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	A1
Specified Value	The brightness difference between the section-A and section-B is minimum

Note 1: Perform "PANEL Gain Adjustment" before this adjustment.
Note 2: Check that the data of page: 0, address: 10 is "00".

Switch setting
VIDEO OUT ..... LCD
(Page: 7, address: 4F, Bit1 = 0)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	7	01	95	
4	7	04	00	
5	7	00	01	Press PAUSE (Write) button.
6	C	A1	70	
7	C	A1		Change the data so that brightness of the section A and section B is equal.
8	C	A1		Set a value obtained by adding 3 to the fore mentioned data, and press PAUSE (Write) button.
9	7	01	95	
10	7	04	01	
11	7	00	01	Press PAUSE (Write) button.
12	3	70	10	Press PAUSE (Write) button.
13	3	70		Check the data changes to "11".
14	0	01	00	

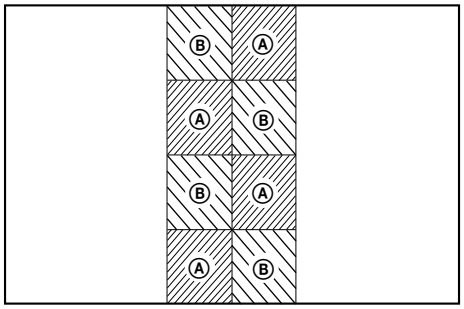


Fig. 6-1-13

3. Transmissive Mode White Balance Adjustment (PD-372 board)

Correct the white balance at transmissive mode.
If deviated, the LCD screen color cannot be reproduced.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	C
Adjustment Address	A2, A3
Specified Value	LCD screen must not be colored

Note 1: Check that the data of page: 0, address: 10 is "00".
Note 2: Check the white balance only when replacing the following parts. If necessary, adjust them.
1. LCD block
2. Light induction plate
3. IC6001

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	7	01	95	
4	7	04	00	
5	7	00	01	Press PAUSE (Write) button.
6	C	A2	20	Press PAUSE (Write) button.
7	C	A3	20	Press PAUSE (Write) button.
8				Check that the LCD screen is not colored. If not colored, proceed to step 10.
9	C	A2 A3		Change the data so that the LCD screen is not colored. (Note 3)
10	7	01	95	
11	7	04	01	
12	7	00	01	Press PAUSE (Write) button.
13	3	70	10	Press PAUSE (Write) button.
14	3	70		Check the data changes to "11".
15	0	01	00	

Note 3: To write in the non-volatile memory (EEPROM), press the PAUSE (Write) button each time to set the data.

6-2. MECHANISM SECTION ADJUSTMENTS

1. Preparations for Check, Adjustment and Replacement of Mechanism Block

- Refer to the "DISASSEMBLY" section of the SERVICE MANUAL of the respective models for details of removing cabinets and printed wiring boards.
- When making any adjustment to a mechanism or replacing mechanical parts, be sure to use the Mode Selector II and select the appropriate status of the mechanical deck such that the mechanical status is suitable for the desired work. Refer to section "2-4. Mode Selector II Operating Procedure" for details on how to enter the mode shown in a rectangle [____] mode in subsequent paragraphs of this manual.

2. Periodic Inspection and Maintenance

- Be sure to perform the following maintenance and inspection so that the machine delivers its full performance and functions, and to protect the machine and tape. Also, perform the following maintenance items after completing the repair work, regardless of the number of hours the machine has been operated by the user.

2-1. Rotary Drum Cleaning

1) Press a wiping cloth (Ref. No. J-20) moistened with head cleaning liquid (Ref. No. J-19) lightly against the rotary drum. Rotate the upper drum with a super-fine applicator slowly in the counter-clockwise direction to clean the rotary drum.

Caution: Never rotate the rotary drum by turning on the main power of the motor or rotate it in the clockwise direction. Never move the cloth vertically against the head tip, as this will surely damage the video head; the video head must not be cleaned by any other different methods.

2-2. Tape Path System Cleaning (Refer to Fig. 6-2-1.)

1) Set the EJECT state. Clean the tape running path (TG-1, -2, -3, -4, -5 and -6 pinch roller and capstan shaft) and lower drum with a super-fine applicator (Ref. No. J-21) moistened with head cleaning liquid.

Note 1: NBe careful not to allow oil or grease of the various link mechanisms to get on the super-fine applicator (Ref. No. J-21).
Note 2: Once the super-fine applicator has been moistened with alcohol, do not use it to clean other mechanical parts such as the tape guide. However, the pinch roller is cleaned with alcohol.
Note 3: When cleaning the capstan shaft, be careful not to move the oil seal. If the oil seal is moved, oil will leak.

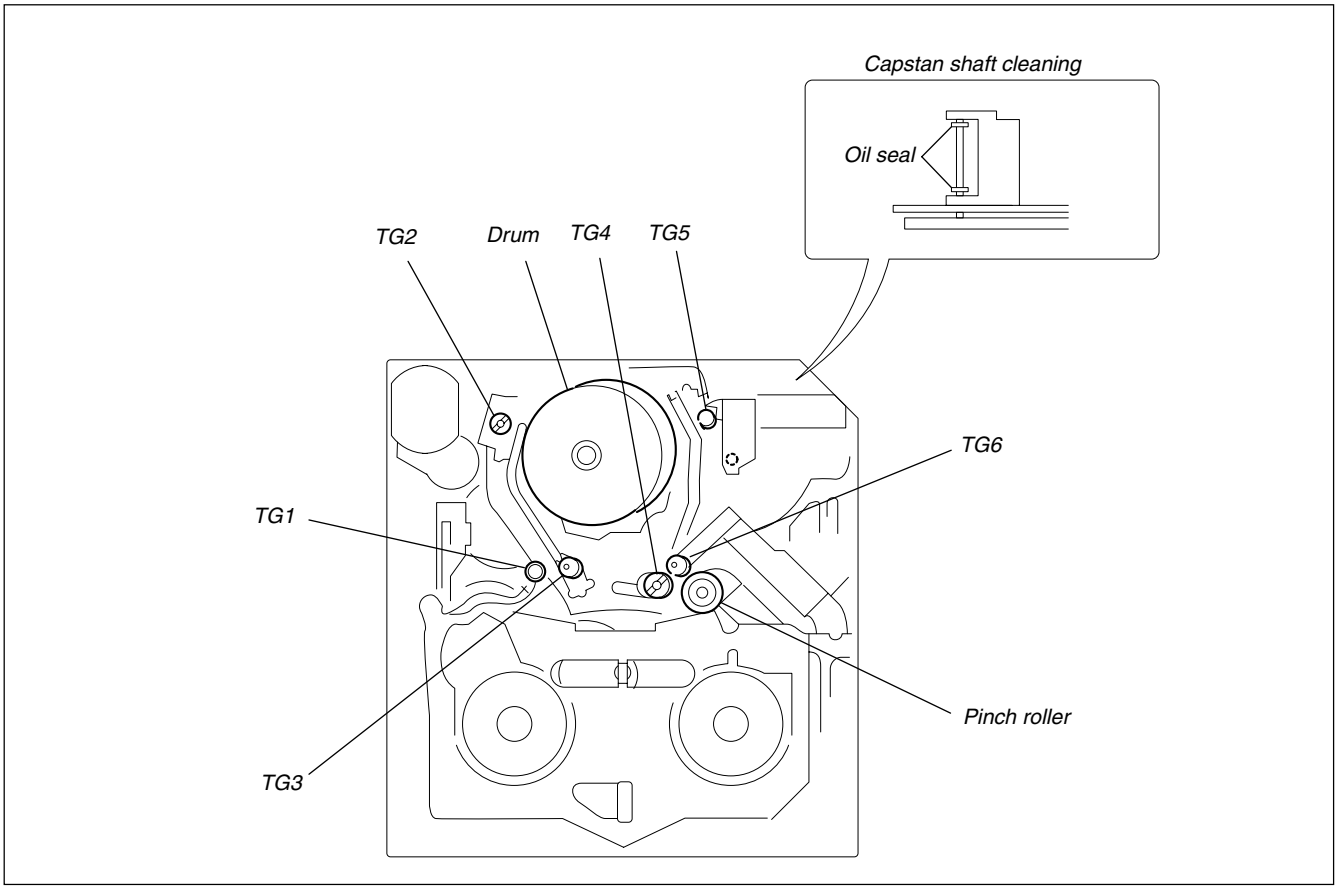


Fig. 6-2-1

2-3. Periodic Inspection List

Maintenance and inspection item		Operating hours (H)										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Tape running surface cleaning	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
	Rotary drum cleaning and degaussing	○	○	○	○	○	○	○	○	○	○	Be careful not to attach oil
Drive mechanism	Capstan bearing	—	☆	—	☆	—	☆	—	☆	—	☆	
Drive mechanism	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
Performance check	Back-tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
Performance check	FWD/RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○: Cleaning, ☆: Check

Note 1: When the machine is overhauled, replace the parts referring to the above list.

Note 2: Grease

- Be sure to use the specified grease only. (If grease of different viscosity is used, it can cause various troubles.)
- The grease must not contain any dust or other matter. (otherwise it can cause various trouble.)
- Observe the noted amount of grease. (otherwise the oozed grease can cause troubles.)
- Grease (SUNCALL FG-87HSR) : Part cord. 7-640-006-08

2-4. Mode Selector II Operating Procedure

2-4-1. Introduction

The Mode Selector II is a mechanism drive tool that assists maintenance work of the various mechanism decks. It has the following functions.

1. Manual Test

In this mode, the motor of the mechanism deck is powered only during the period while the switch is turned on manually. Using the Manual Test, the operator can freely control the motor of the mechanism deck.

2. Step Test

In this mode, the motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information. The Step Test is used to confirm a series of movements of the mechanism deck.

3. Auto Test

The Mode Selector II stores the status transition table in its memory as data indicating the respective modes of the mechanism deck. The status transition table can be used to confirm whether a mechanism deck is operating normally or has abnormality from a series of movements of a mechanism deck. If an abnormal status transition is detected during operation, the "NG" indication appears and the mechanism stops moving.

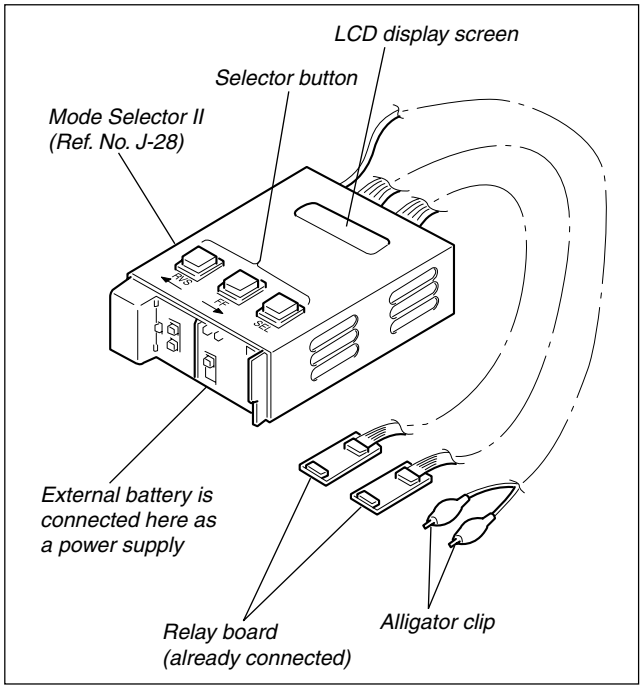


Fig. 6-2-2

Mode Selector II (J-6082-282-B) connection diagram

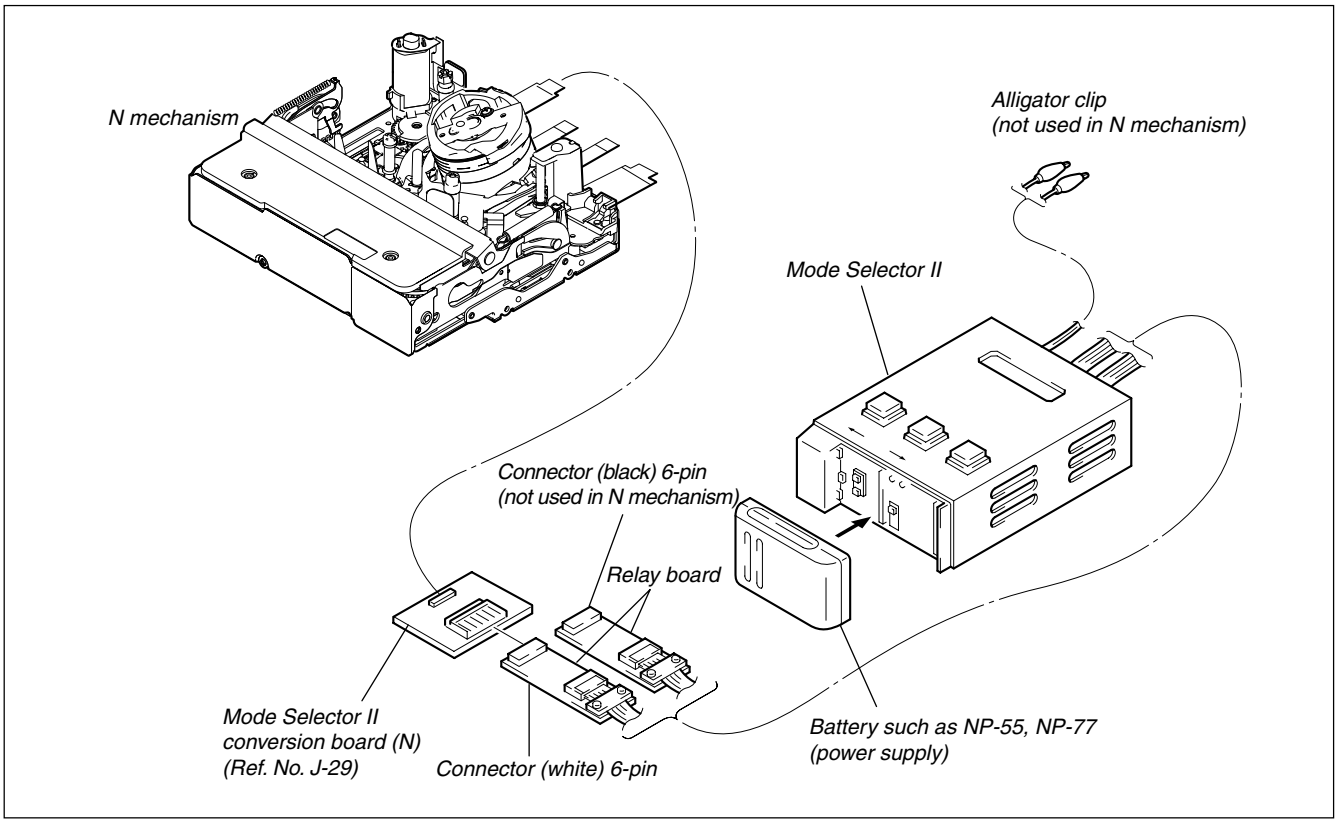
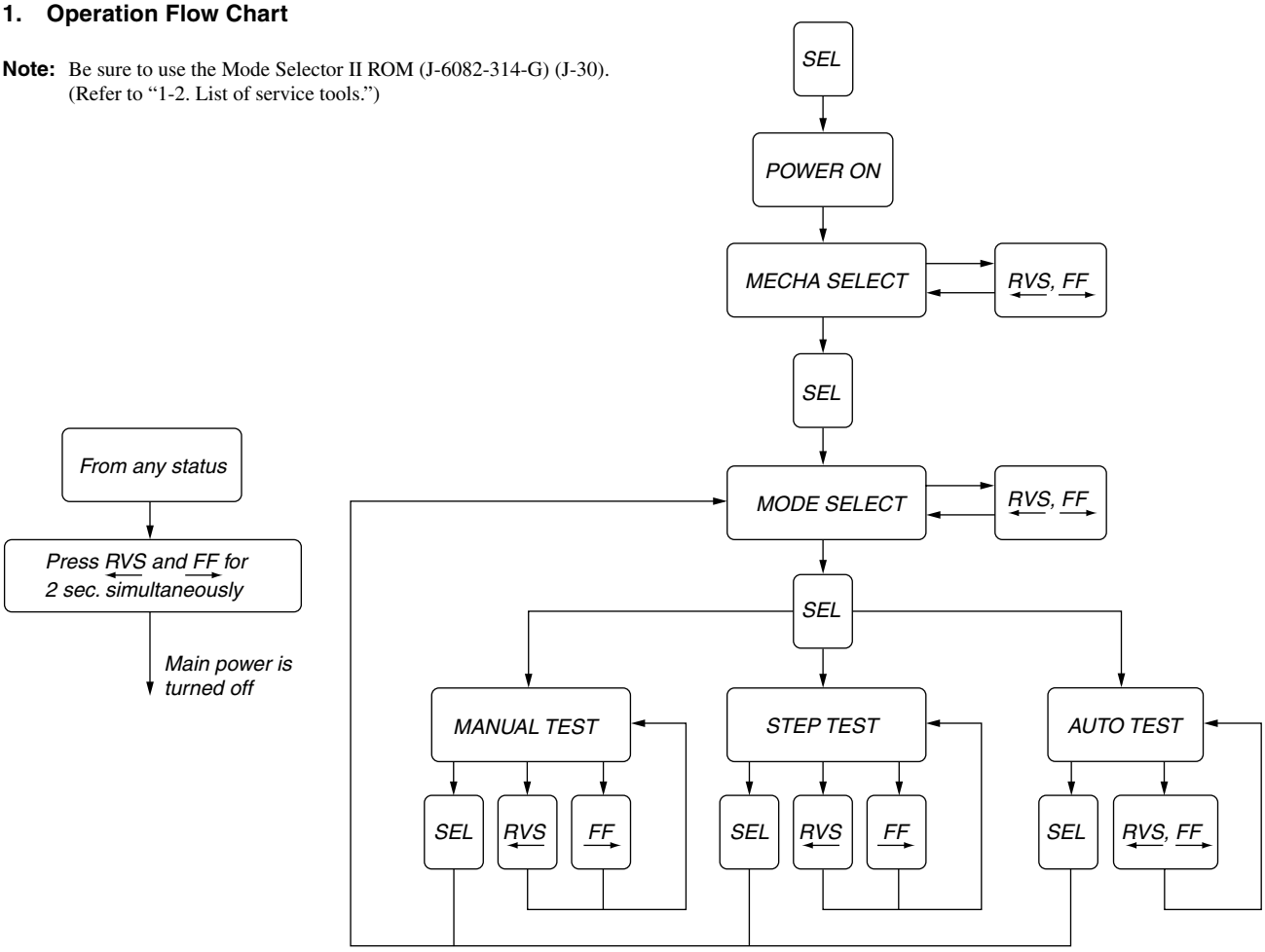


Fig. 6-2-3

2-4-2. Operation

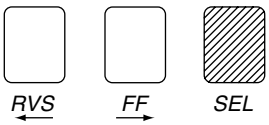
1. Operation Flow Chart

Note: Be sure to use the Mode Selector II ROM (J-6082-314-G) (J-30). (Refer to "1-2. List of service tools.")



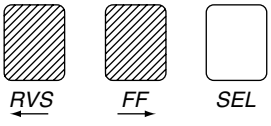
2. Mode Selector II Power On

Turn on the main power of the Mode Selector II as follows.
Press the SEL button.



3. Mode Selector II Power Off

Turn off the main power of the Mode Selector II as follows.
Press the RVS and FF buttons at the same time for 2 seconds or longer while the power is on.



4. Mecha Select

When the main power is turned on, the MECHA SELECT display appears on the LCD screen. Select the desired mechanism name using the RVS and FF buttons. Selection is complete when the SEL button is pressed. (Fig. A shows the N mechanism.)

Note: Set the "MECHA SELECT" indication to "Z" when using the mode selector II to operate the N Mechanism.

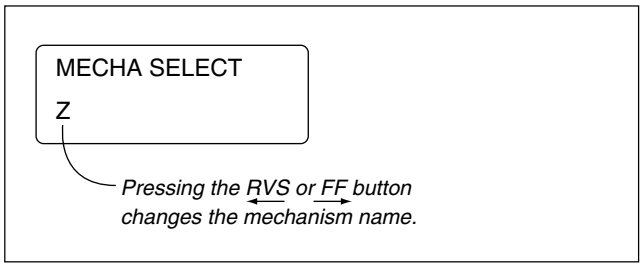


Fig. A

5. Test Type Select

Using the RVS and FF buttons, select a desired test type from the three types of "MANUAL", "STEP" and "AUTO". Selection is complete when the SEL button is pressed.

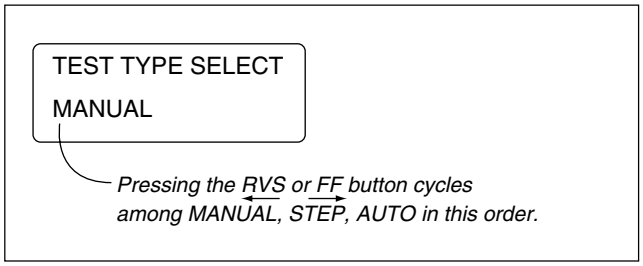


Fig. B

6. Manual Test

In this test, the motor of the mechanism deck is turned on only during the period while the RVS or FF button is pressed manually.

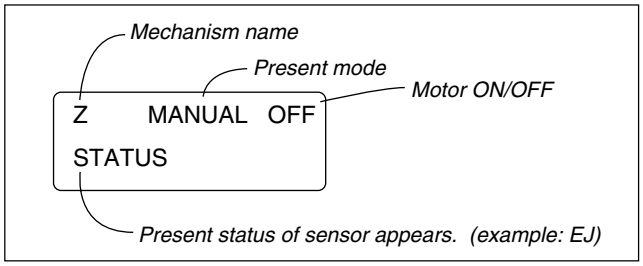


Fig. C

7. Step Test

In this test, the direction of motor movement is determined by the RVS and FF buttons. The motor of the mechanism deck is kept turned on until the mechanical status is changed from the present mechanical status that is obtained from the sensor information.

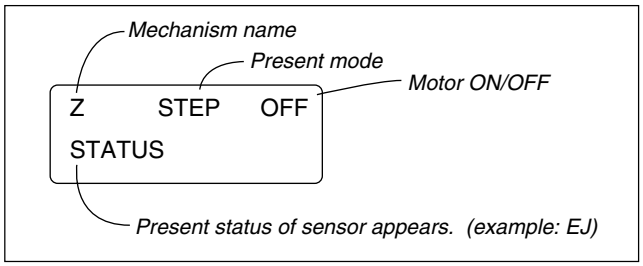


Fig. D

8. Auto Test

In this test, the mechanism deck is tested as to whether it performs a series of movements correctly in accordance with the operation sequence that is memorized earlier for each type of deck, by checking the output signals from sensors with the stored memory. Turning on the RVS or FF button performs the same operation.

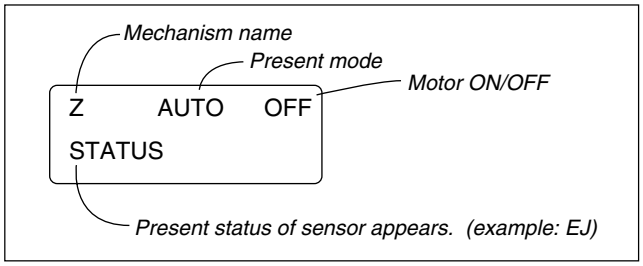


Fig. E

2-4-3. Mechanism Status (Position) Transition Table Using Mode Selector II

After selecting a mechanism deck, select either the MANUAL or STEP test (not AUTO) using the Mode Selector II. The desired mechanism status (position) can be specified by pressing the RVS or FF button. (The selected status appears on STATUS.)
EJ⟷ULE⟷LD1 (SR)⟷LD2 (HL)⟷STOP⟷R/P

Code \ MD name				N Mechanism (Display: Z)
A	B	C		
0	1	0	1	EJ
1	1	0	2	ULE
1	0	0	3	LD1 (SR)
1	0	1	4	LD2 (HL)
0	0	1	5	STOP
0	1	1	6	R/P

2-4-4. Battery Alarm Indication

When the level of the battery used to supply power to this system decreases, this display appears asynchronously. When this happens, all operations are disabled and the battery must be replaced.

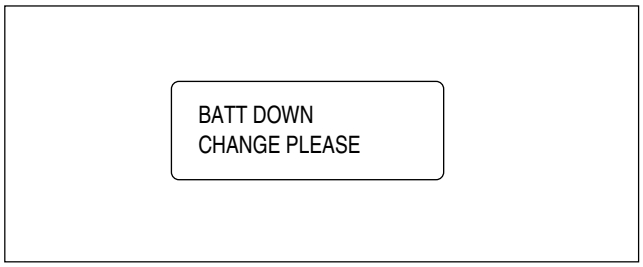
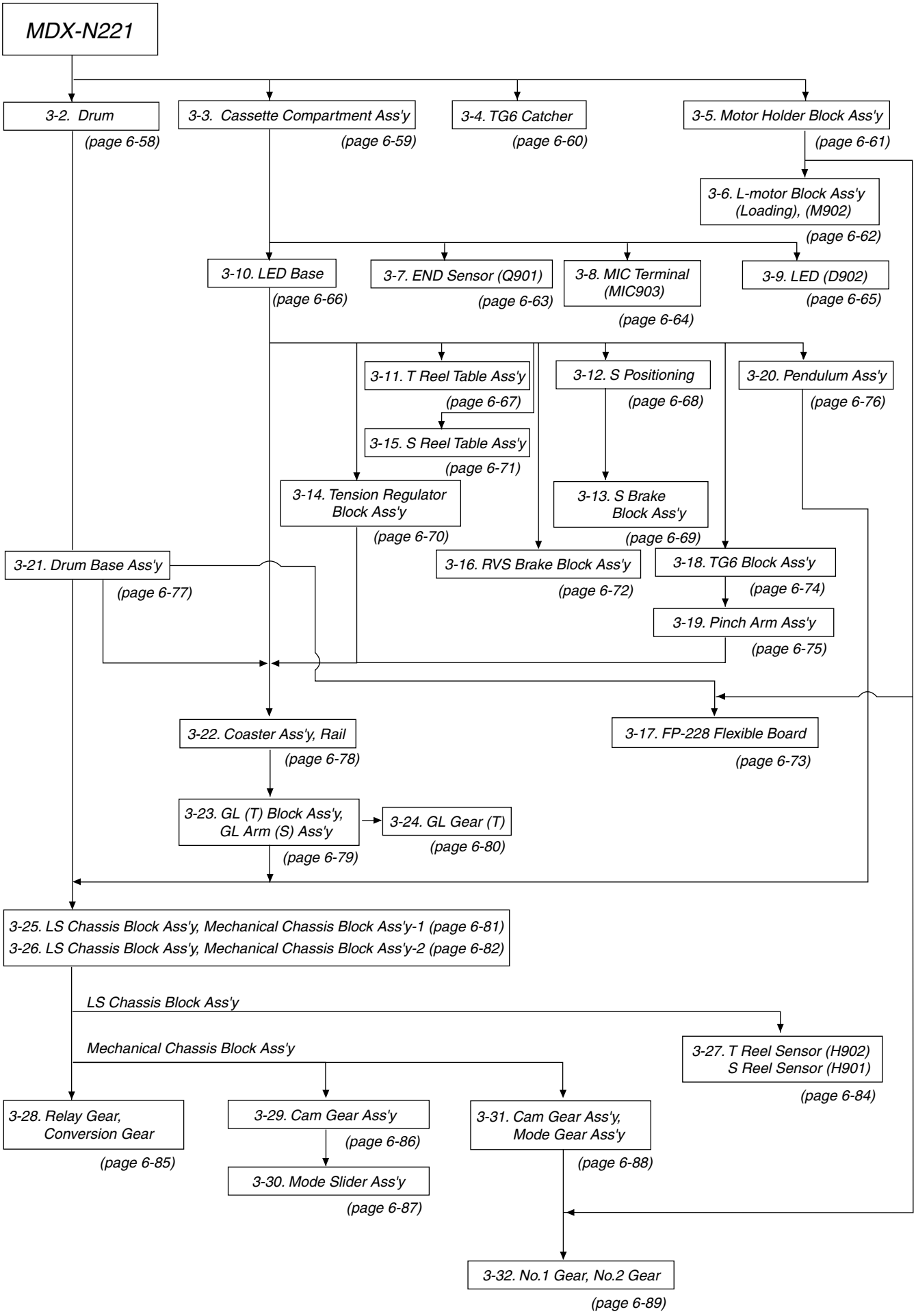


Fig. F

3. Check, Adjustment and Replacement of Mechanical Parts

3-1. Flowchart of Replacement of Mechanical Parts



1. Removal procedure

1) Enter the [ULE] mode.
2) Peel away the portion Ⓐ of the drum flexible board from the flexible adhesive sheet ①.
3) Remove the three screws (special head screw M1.4 × 2.0) ② and remove the drum ③.
4) Peel away the flexible adhesive sheet ④.
(Don't re-use the flexible adhesive sheet.)

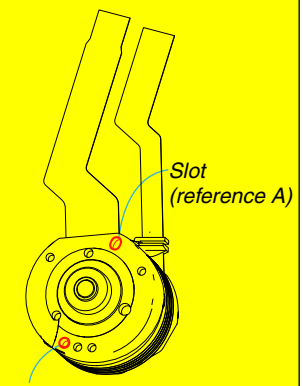
2. Attachment procedure

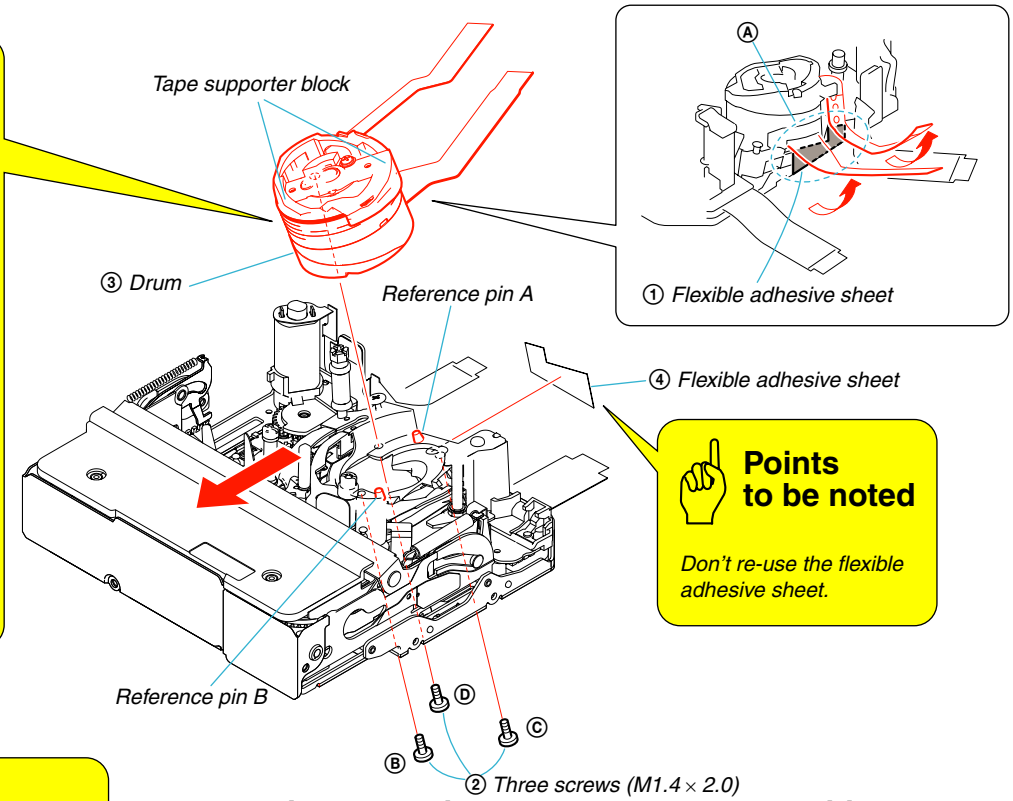
1) Enter the [ULE] mode.
2) Attach the flexible adhesive sheet ④.
3) Hold the tape supporter block, and set the reference holes A and B to the drum base reference pins A and B.
4) Install the the drum ③ with the three screws (special head screw M1.4 × 2.0) ② in the order of Ⓑ, Ⓒ and Ⓓ.
Tightening torque: 0.04 ± 0.01 N•m (0.41 × 0.1 kgf•cm)
5) Attach the portion Ⓐ of the drum flexible board to the flexible adhesive sheet ①.
6) Clean the tape path mechanism by referring to Section 2-2. (Refer to Section "2-2. Tape Path System Cleaning".)
7) Implement the tape path adjustment. (Refer to Section "4-3. Tape Path Adjustment")

Drum (rear view)

Key Points in Re-assembling

Drum (rear view)





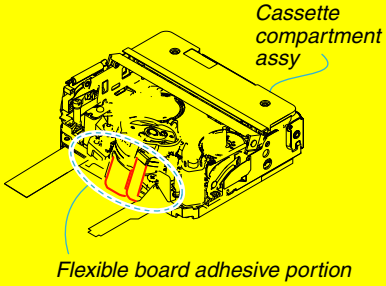
Points to be noted

Don't re-use the flexible adhesive sheet.

HOW TO PLACE THE MECHANISM

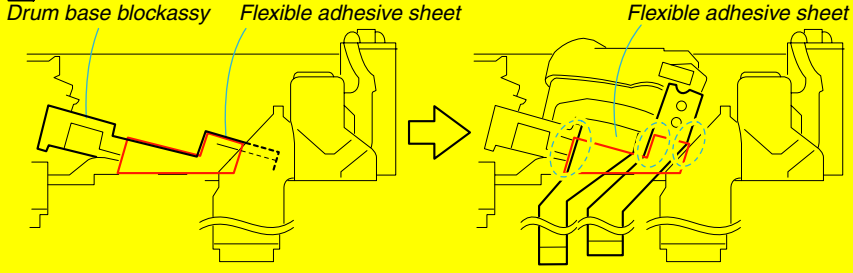
Points to be noted

After the flexible board is attached to the flexible adhesive sheet, place the flexible board, that is folded up, at the rear of the mechanism chassis to prevent the adhered portion from peeling away.



Flexible adhesive sheet attachment position

Key Points in Re-assembling



Attach the flexible adhesive sheet along the outer shape of the drum base block assy.

Attach the flexible board while aligning its side with the outer profile of the flexible adhesive sheet.

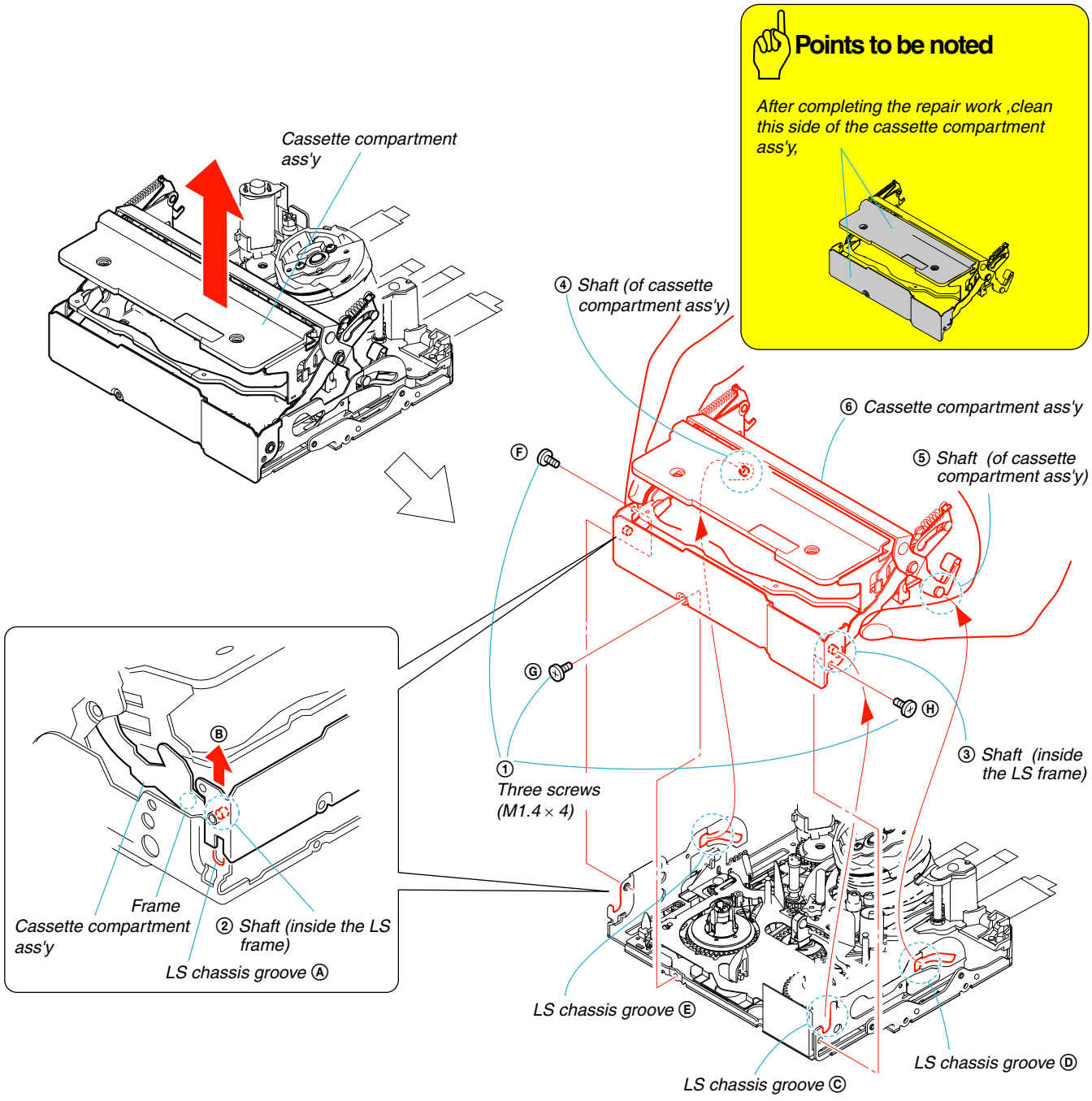
3-3. Cassette Compartment Ass'y

1. Removal procedure

1) Enter the [EJ] mode.
2) Remove the three screws (special head screw M1.4 × 1.4) ①.
3) While pushing the frame of the cassette compartment ass'y toward inside, remove the shaft ② inside the LS frame from the groove Ⓐ of the LS chassis in the direction of the arrow Ⓑ.
4) Remove the shaft ③ inside the LS frame from the groove Ⓒ of the LS chassis.
5) Remove the cassette compartment ass'y shafts ④ and ⑤ from the LS chassis grooves Ⓓ and Ⓔ. Remove the cassette compartment ass'y ⑥.

2. Attachment procedure

1) Enter the [ULE] mode.
2) Install cassette compartment ass'y ⑥ shafts ⑤ and ④ into the LS chassis grooves Ⓔ and Ⓓ.
3) While pushing the LS frame inward, install the shafts ③ and ② inside the LS frame into the grooves Ⓒ and Ⓐ of the LS chassis.
4) Install the three screws (special head screw M1.4 × 1.4) ① in the order of Ⓕ, Ⓖ and Ⓗ.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)


Points to be noted
After completing the repair work ,clean this side of the cassette compartment ass'y,
Cassette compartment ass'y
④ Shaft (of cassette compartment ass'y)
⑥ Cassette compartment ass'y
Ⓕ
⑤ Shaft (of cassette compartment ass'y)
Ⓖ
Ⓗ
③ Shaft (inside the LS frame)
① Three screws (M1.4 × 4)
Ⓑ
Frame
Cassette compartment ass'y
② Shaft (inside the LS frame)
LS chassis groove Ⓐ
LS chassis groove Ⓔ
LS chassis groove Ⓓ
LS chassis groove Ⓒ

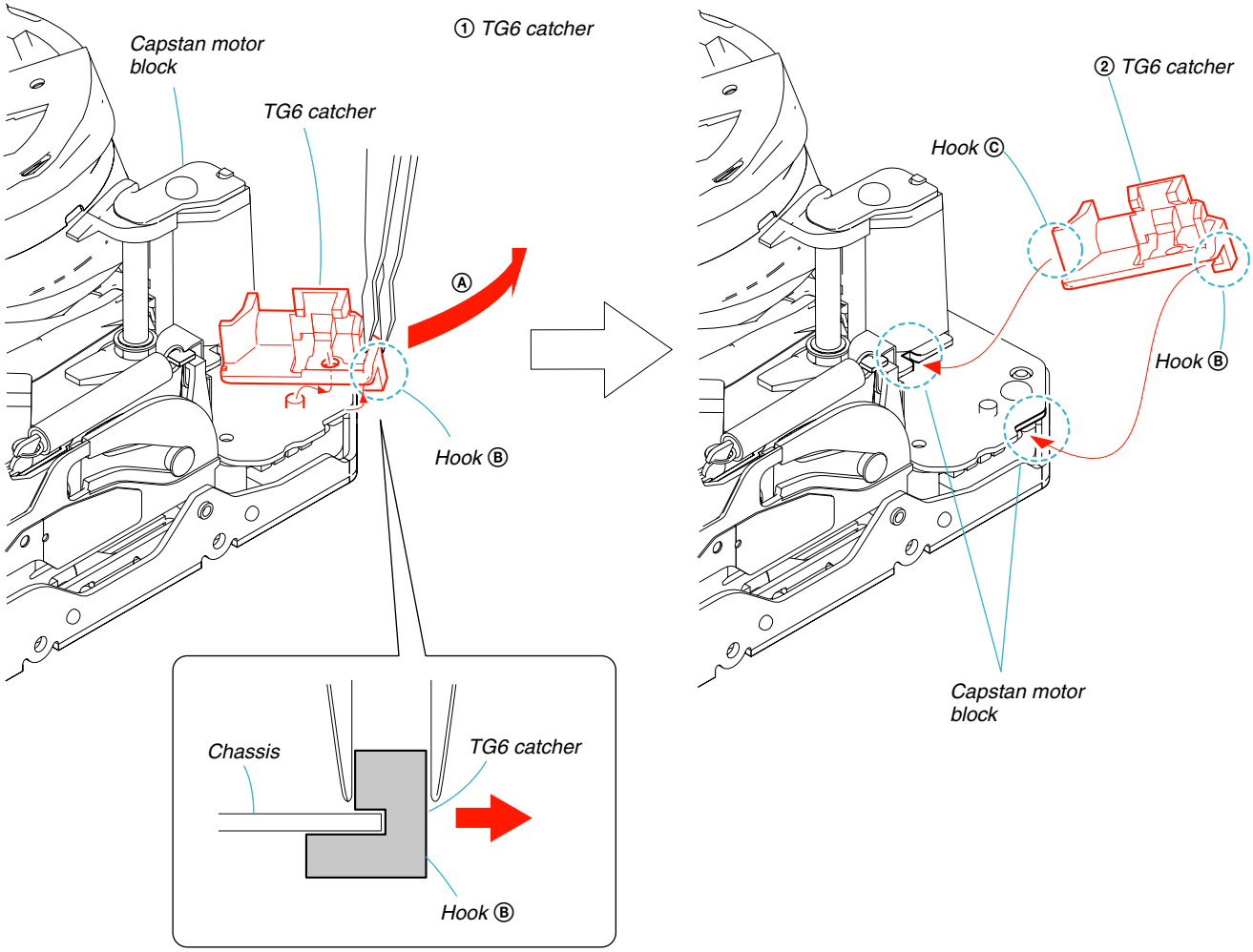
3-4. TG6 Catcher

1. Removal procedure

1) Disengage the hook Ⓑ of the TG6 catcher and remove the TG6 catcher ① from the chassis of the capstan motor block in the direction of the arrow Ⓐ.

2. Attachment procedure

1) Engage the hooks Ⓒ and Ⓑ of the TG6 catcher ② in the capstan motor block.



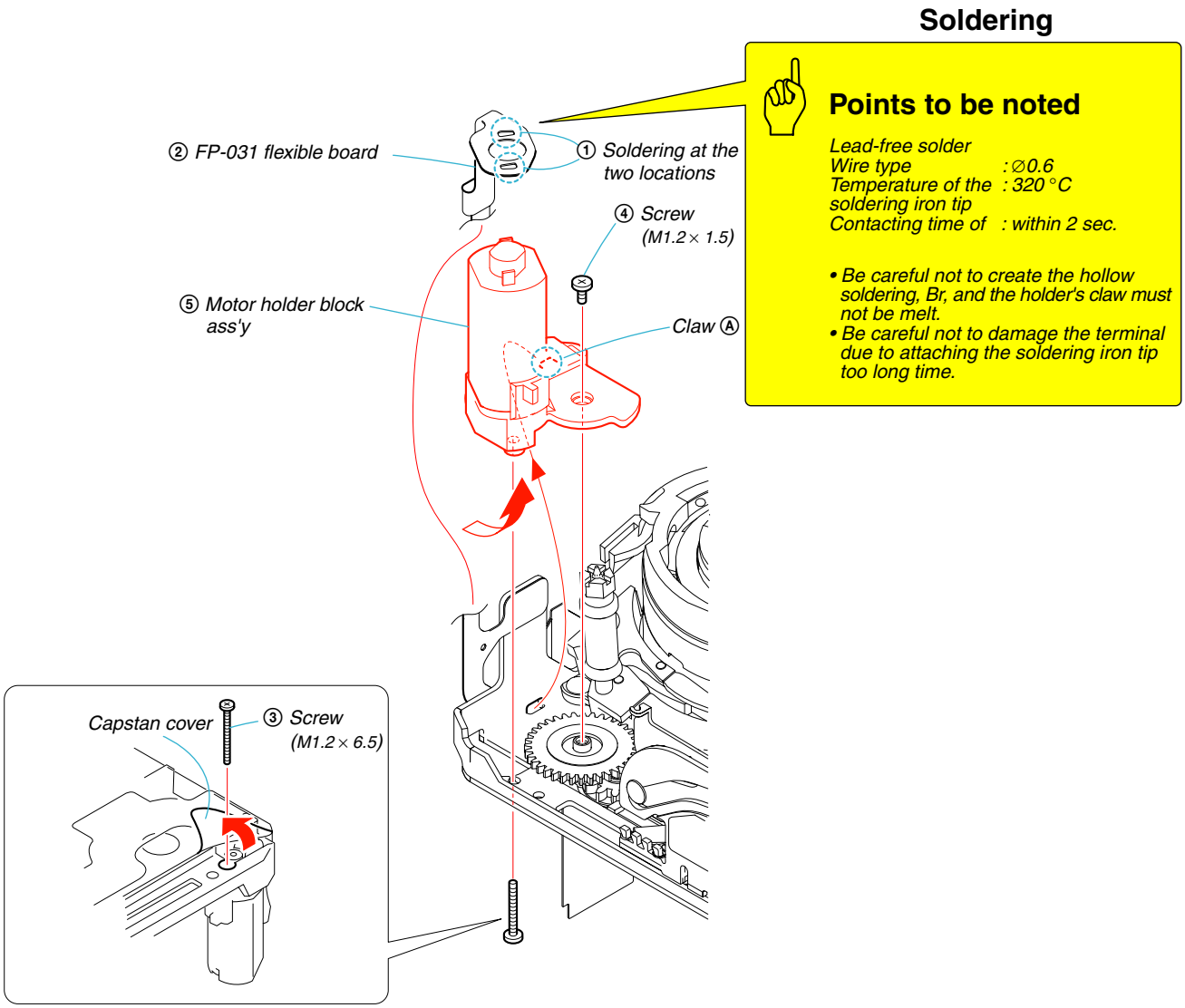
3-5. Motor Holder Block Ass'y

1. Removal procedure

1) Remove the two soldering ① and remove the FP-031 flexible board ② from the motor holder block ass'y ⑤.
2) Turn over the capstan cover and remove the screw (special head screw M1.2 × 6.5) ③.
3) Remove the screw (special head screw M1.2 × 1.5) ④.
4) Disengage the claw Ⓐ and motor holder block ass'y ⑤.

2. Attachment procedure

1) Engage the claw Ⓐ and install the motor holder block ass'y (loading) ⑤.
2) Install the screw (special head screw M1.2 × 1.5) ④.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
3) Turn over the capstan cover and install the screw (special head screw M1.2 × 6.5) ③.
4) Solder the two locations ① and install the FP-031 flexible board ② to the motor holder block ass'y (loading) ⑤.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)


Soldering
Points to be noted
Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of : within 2 sec.
• Be careful not to create the hollow soldering, Br, and the holder's claw must not be melt.
• Be careful not to damage the terminal due to attaching the soldering iron tip too long time.
② FP-031 flexible board
① Soldering at the two locations
④ Screw (M1.2× 1.5)
⑤ Motor holder block ass'y
Claw Ⓐ
Capstan cover
③ Screw (M1.2× 6.5)

3-6. L-motor Block Ass'y (Loading) (M902)

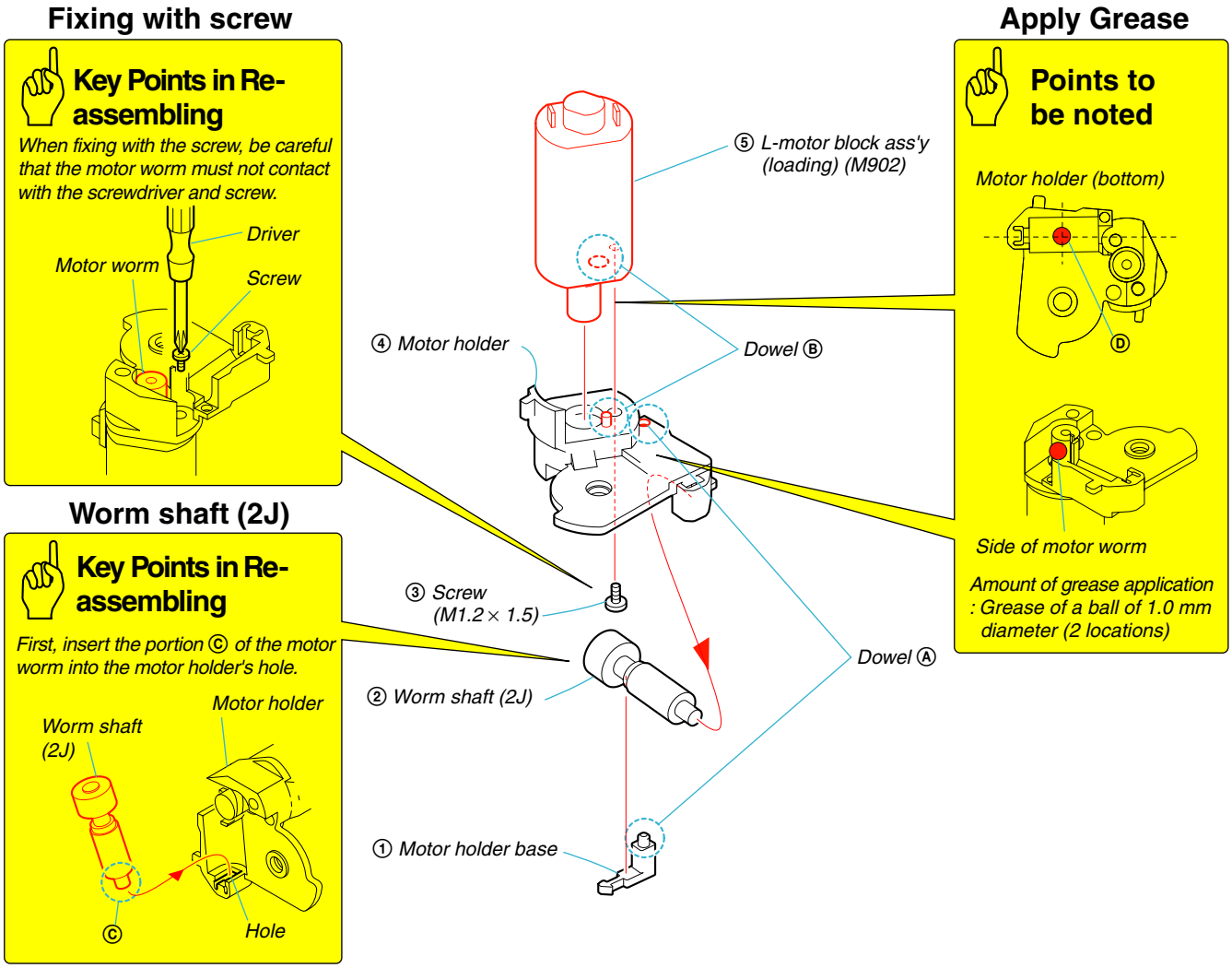
1. Removal procedure

1) Release the dowel Ⓐ, and remove the motor holder base ①.
2) Remove the worm shaft (2J) ②.
3) Remove the screw (special head screw M1.2 × 1.5) ③ and remove the L-motor block ass'y (loading) (M902) ⑤ from the motor holder ④.

2. Attachment procedure

1) Align the L-motor block ass'y (loading) (M902) ⑤ with the dowel Ⓑ, insert it into the motor holder ④. While being careful not to contact the screw and the screwdriver with the motor worm, install the screw (special head screw M1.2 × 1.5) ③.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
2) Apply the grease as much as a ball of 1.0 mm diameter on the portion Ⓓ on the bottom of the motor holder ④ and on the sides of the motor worm.
3) Install the worm shaft (2J) ②.
4) Engage the dowel Ⓐ and install the motor holder base ①.

Note: The motor holder ④ and the motor holder base ① must be replaced simultaneously as a pair.


Fixing with screw
Key Points in Re-assembling
When fixing with the screw, be careful that the motor worm must not contact with the screwdriver and screw.
Driver
Motor worm
Screw
Worm shaft (2J)
Key Points in Re-assembling
First, insert the portion Ⓒ of the motor worm into the motor holder's hole.
Motor holder
Worm shaft (2J)
Ⓒ
Hole
⑤ L-motor block ass'y (loading) (M902)
④ Motor holder
Dowel Ⓑ
③ Screw (M1.2 × 1.5)
② Worm shaft (2J)
Dowel Ⓐ
① Motor holder base
Apply Grease
Points to be noted
Motor holder (bottom)
Ⓓ
Side of motor worm
Amount of grease application : Grease of a ball of 1.0 mm diameter (2 locations)

3-7. END Sensor (Q901)

1. Removal procedure

1) Remove soldering at the two locations ① of the END sensor (Q901).
2) Disengage the claw ② and the END sensor (Q901) ③.
3) Remove soldering at the two locations ④ of the TOP sensor (Q902).
4) Disengage the claw ⑤ and the TOP sensor (Q902) ⑥.

2. Attachment procedure

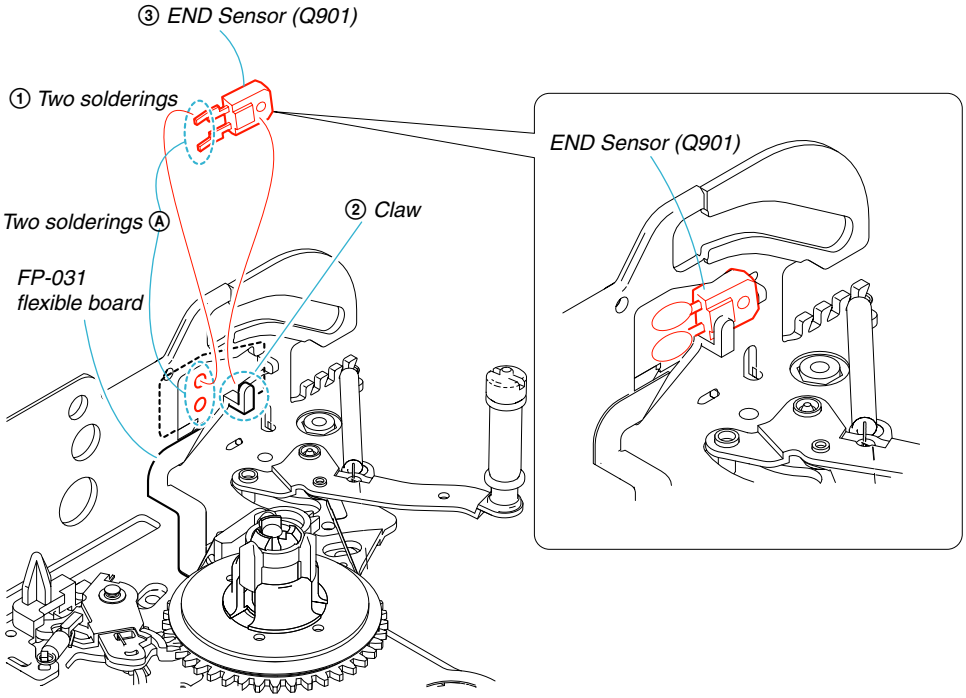
1) Engage the TOP sensor (Q902) ⑥ in the claw ⑤.
2) Solder two locations ④ of the TOP sensor (Q902) and install the TOP sensor (Q902) ⑥ in the FP-031 flexible board.
3) Engage the END sensor (Q901) ③ in the claw ②.
4) Solder two locations ① of the END sensor (Q901) and install the END sensor (Q901) ③ in the FP-031 flexible board.

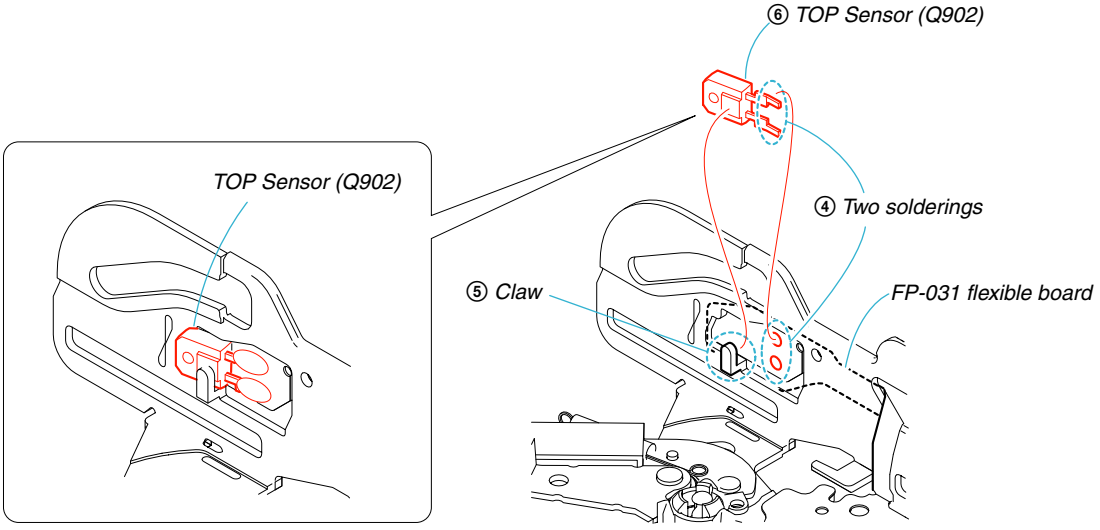
Soldering

Points to be noted

Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

Soldering iron tip temperature: 300±10 °C
Soldering iron tip contacting time within 2 sec.





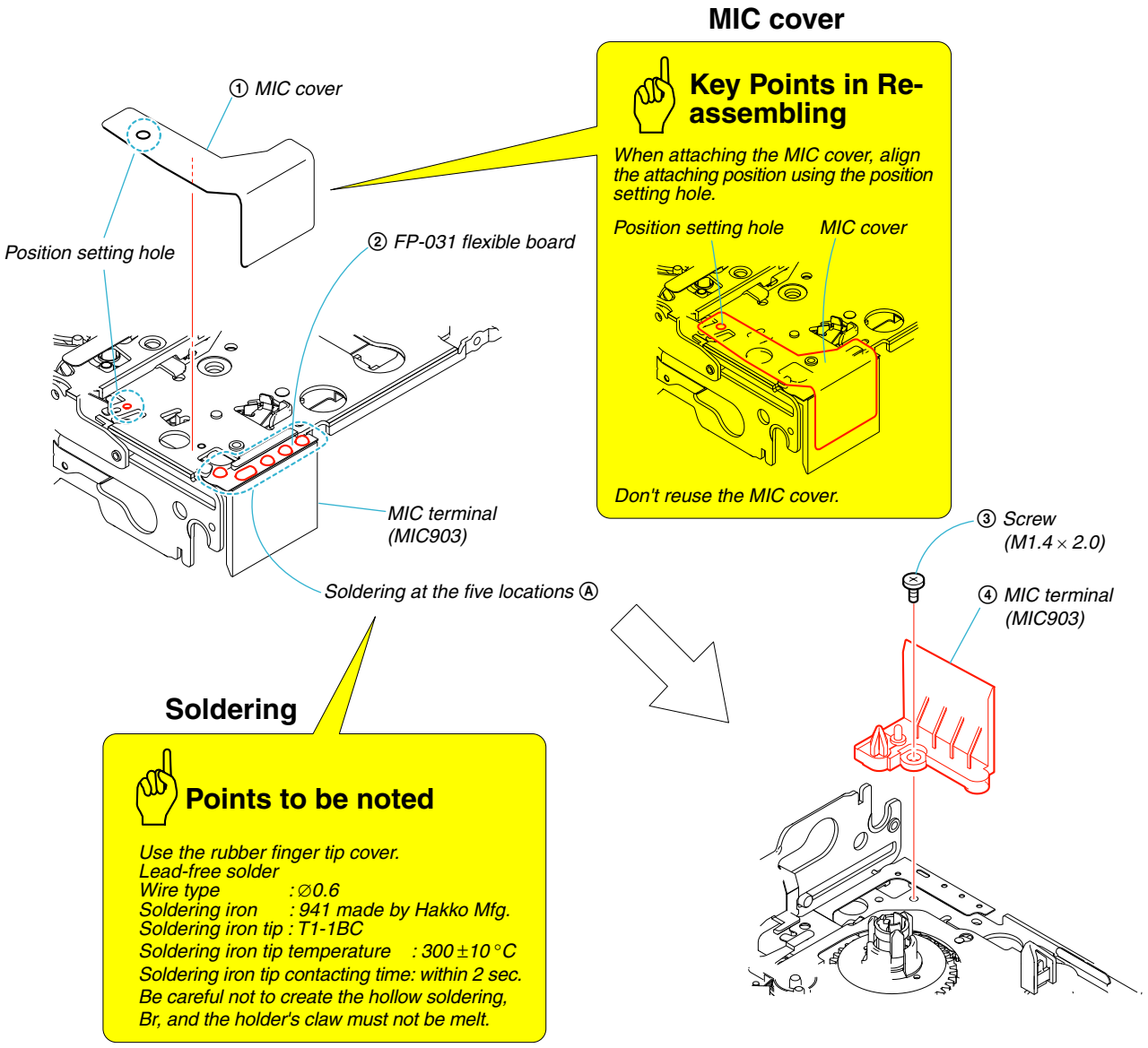
3-8. MIC terminal (MIC903)

1. Removal procedure

1) Enter the [ULE] mode.
2) Peel away the MIC cover ①.
3) Remove soldering at the five locations Ⓐ, and remove the FP-031 flexible board ② from the MIC terminal (MIC903) ④.
4) Remove the screw (special head screw M1.4 × 2.0) ③, and remove the MIC terminal (MIC903) ④.

2. Attachment procedure

1) While pressing the top of the MIC terminal (MIC903) ④, fix it with the screw (special head screw M1.4 × 2.0) ③.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
2) Remove soldering at the five locations Ⓐ, and install the FP-031 flexible board ② to the MIC terminal (MIC903) ④.
3) Align the position setting hole with the hold and attach the MIC cover.
   (Don't reuse the MIC cover.)


MIC cover
Key Points in Re-assembling
When attaching the MIC cover, align the attaching position using the position setting hole.
Position setting hole
MIC cover
Don't reuse the MIC cover.
① MIC cover
Position setting hole
② FP-031 flexible board
MIC terminal (MIC903)
Soldering at the five locations Ⓐ
③ Screw (M1.4 × 2.0)
④ MIC terminal (MIC903)
Soldering
Points to be noted
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ± 10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering,
Br, and the holder's claw must not be melt.

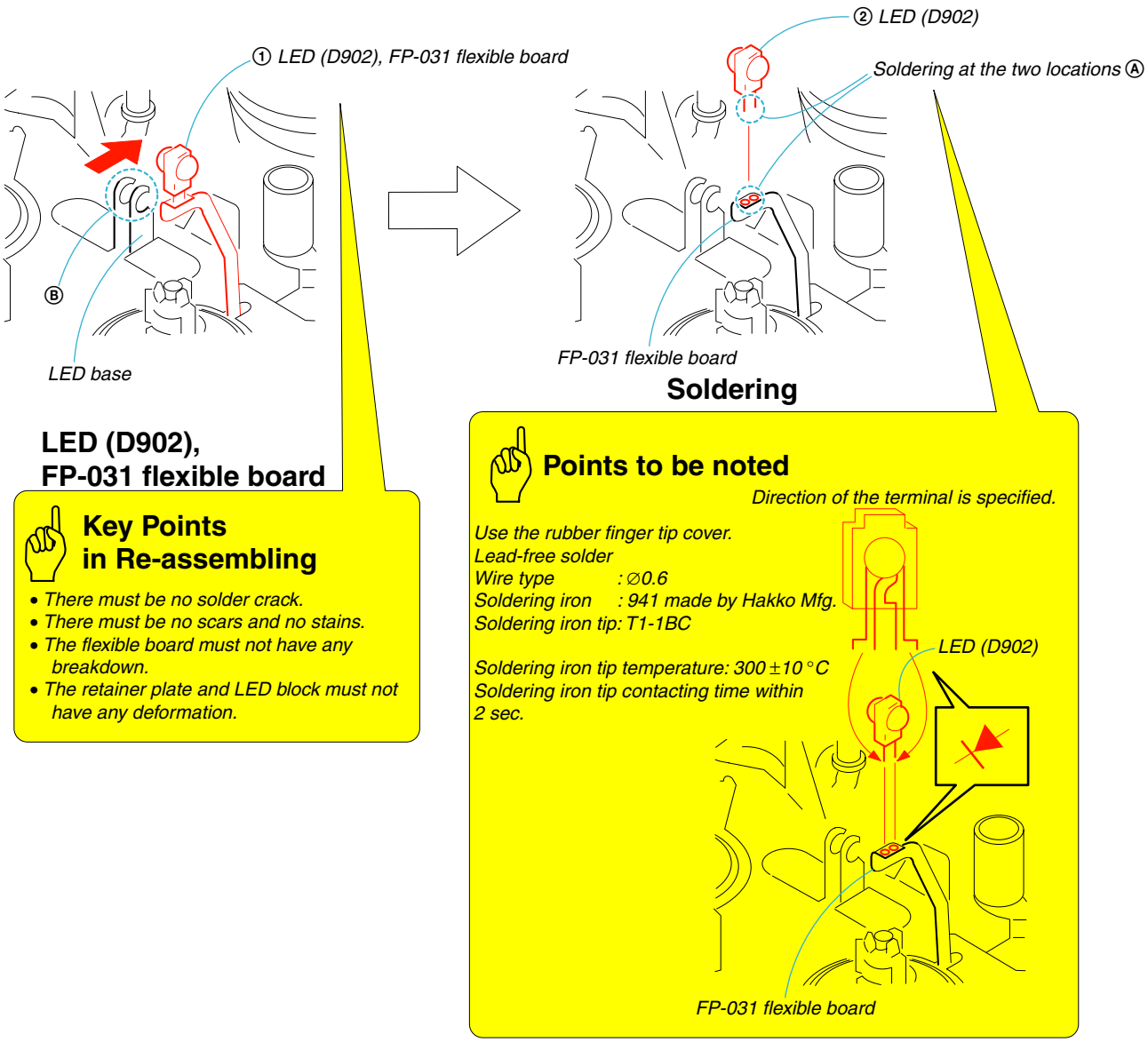
3-9. LED (D902)

1. Removal procedure

1) Remove the LED (D902) and the FP-031 flexible board ①from the LED base.
2) Remove soldering at the two locations Ⓐ, and remove the LED (D902) ②.

2. Attachment procedure

1) Remove soldering at the two locations Ⓐ, and install the LED (D902) ② in the FP-031 flexible board.
2) Roll up the FP-031 flexible board under the LED (D902) ① with fingertip, and insert the LED top head into the portion Ⓑ of the LED base. Then route the flexible board in the specified position.


① LED (D902), FP-031 flexible board
② LED (D902)
Soldering at the two locations Ⓐ
Ⓑ
LED base
FP-031 flexible board
Soldering
LED (D902),
FP-031 flexible board
Key Points
in Re-assembling
• There must be no solder crack.
• There must be no scars and no stains.
• The flexible board must not have any breakdown.
• The retainer plate and LED block must not have any deformation.
Points to be noted
Direction of the terminal is specified.
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC
Soldering iron tip temperature: 300 ±10 °C
Soldering iron tip contacting time within 2 sec.
LED (D902)
FP-031 flexible board

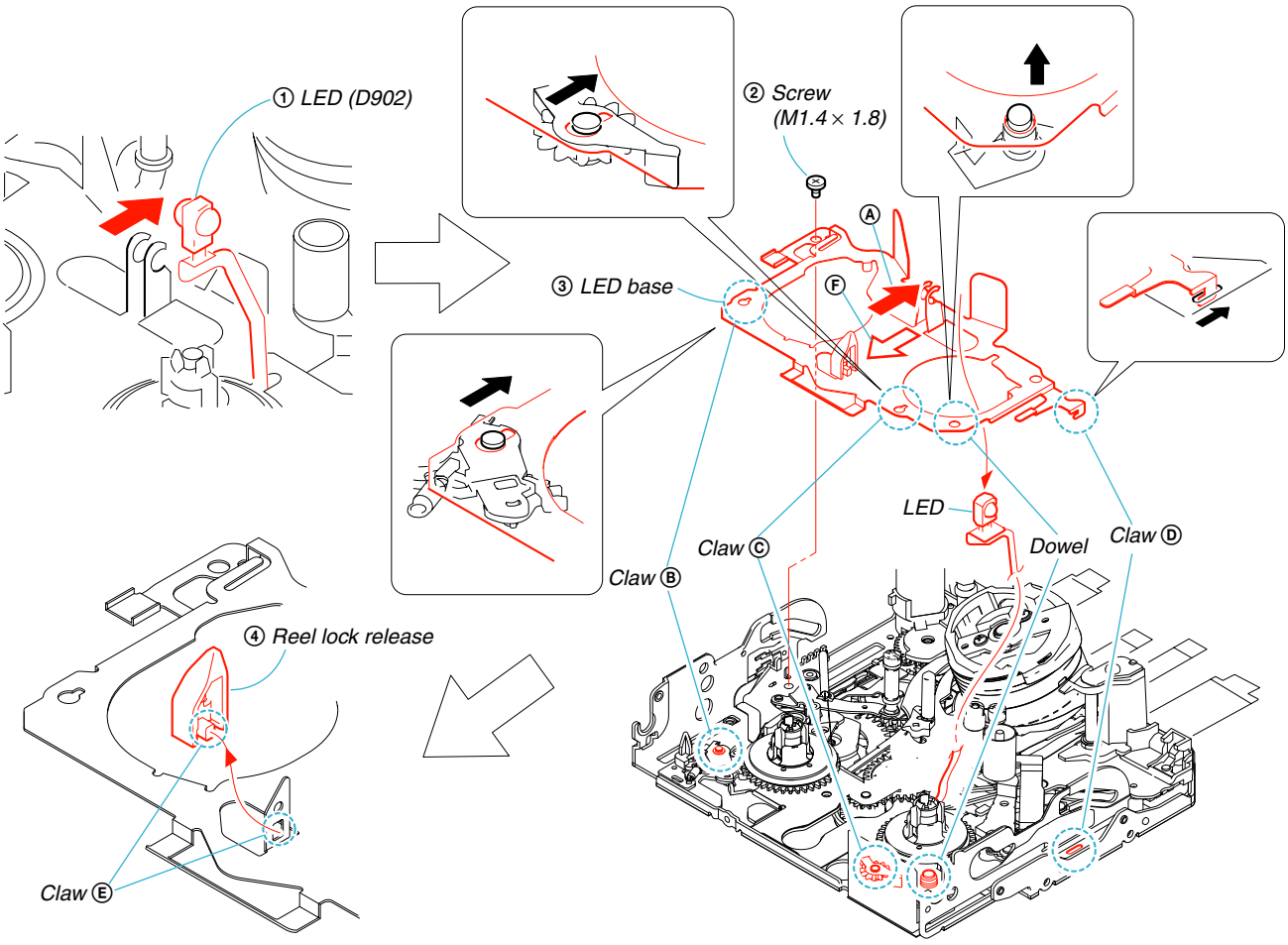
3-10. LED Base

1. Removal procedure

1) Remove the LED (D902) ① from the LED base.
2) Remove the screw (precision screw M1.4 × 1.8) ②.
3) Float the LED base ③ and remove the dowel.
4) Slide the LED base ③ in the direction of the arrow Ⓐ, and disengage the three claws at Ⓑ, Ⓒ and Ⓓ.
5) While freeing the LED from the LED base ③, remove the LED base ③.
6) Disengage the claw Ⓔ and remove the Reel Lock Cancel.

2. Attachment procedure

1) Install the Reel Lock Cancel.
2) While passing the LED (D902) ① through the hole of the LED base ③, place the LED base ③ on top of the LS chassis.
3) Align the position of the LED base ③ first with the claws Ⓑ and Ⓒ, then slide the LED base ③ in the direction of the arrow Ⓕ, and engage the three claws Ⓑ, Ⓒ and Ⓓ, and the dowel.
4) Install the screw (precision screw M1.4 × 1.8) ②.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
5) Install the LED (D902) ① to the LED base.



Reel lock release

Key Points in Re-assembling

- *The reel lock release part must not be re-used.*
- *The retainer plate must not have any deformation.*
- *The reel lock release must be full engaged. (Must not be left in the half-installed state.)*

LED base

Key Points in Re-assembling

- *All claws must be fully engaged. (Caution : No claws should be left disengaged.)*
- *The flexible board should not be pinched by anything.*
- *The retainer plate must not touch with the MIC terminal.*

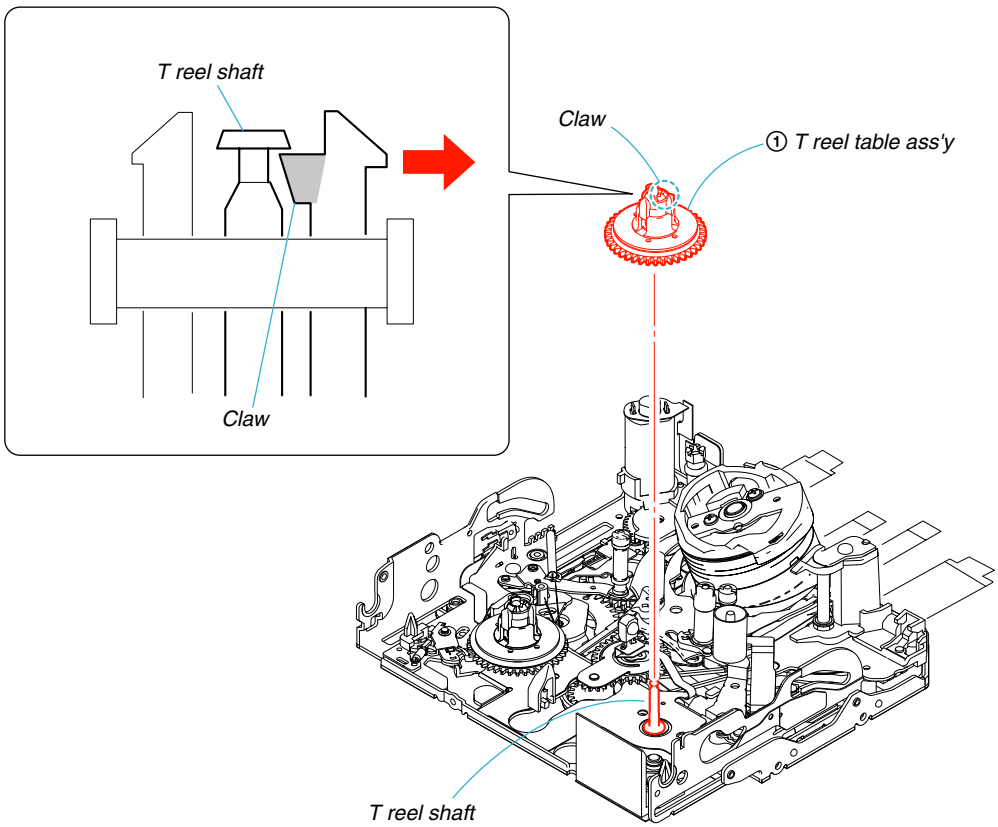
3-11. T reel Table Ass'y

1. Removal procedure

1) While freeing the claw from the T reel shaft in the direction of the arrow, remove the T reel table ass'y ①.

2. Attachment procedure

1) Verify that the part that is going to be installed is the T reel table ass'y. Then insert it into the T reel shaft. While rotating it, snap it in. (Verify that it is locked.)



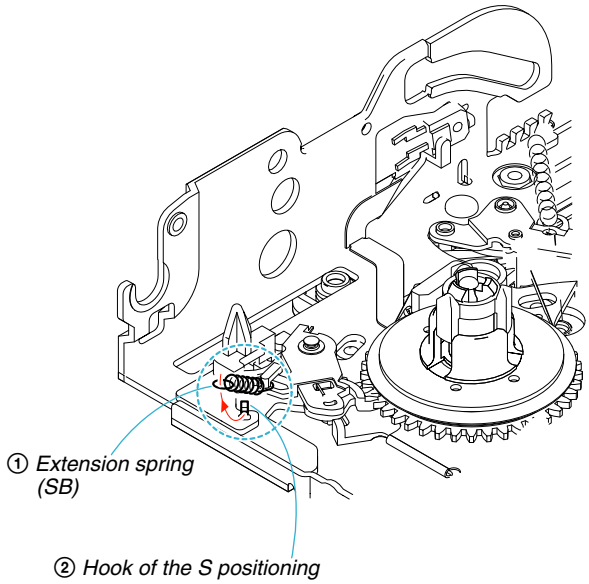
3-12. S Positioning

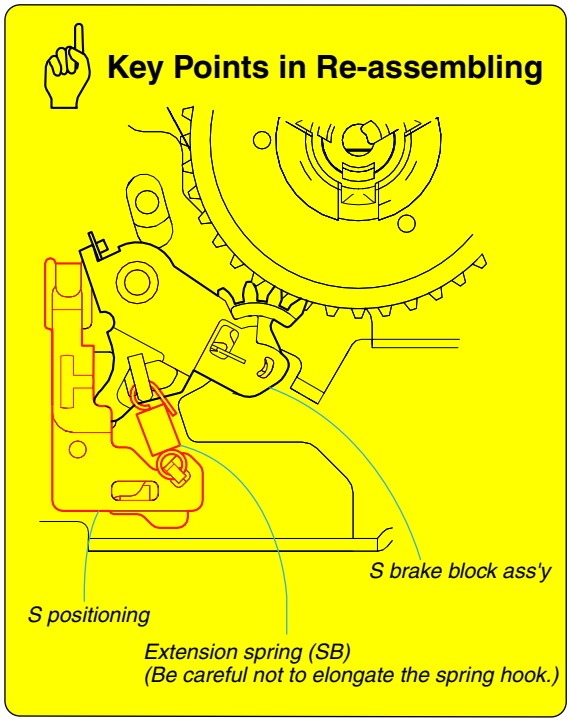
1. Removal procedure

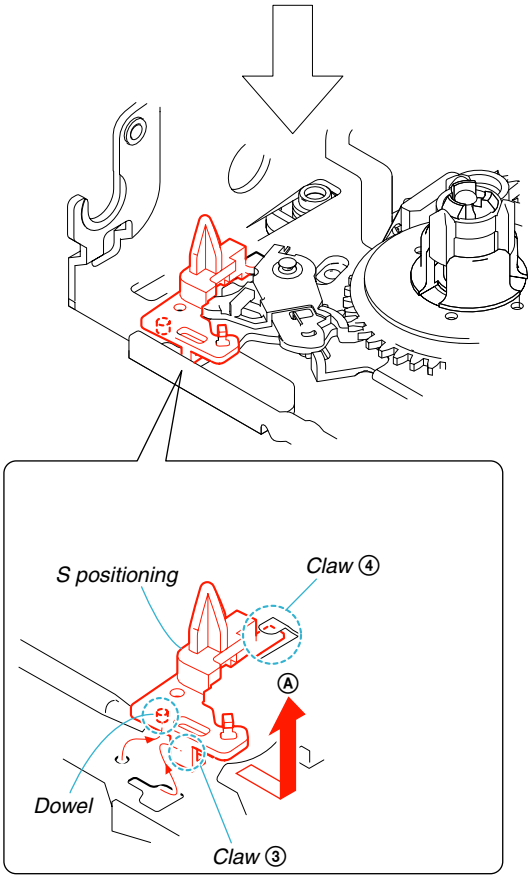
1) Remove the tension coil spring (SB) ① from the hook of the S positioning ②.
2) Rotate the S positioning in the direction of the arrow Ⓐ, and remove the claw ③ and disengage the dowel.
3) Remove the claw ④ and remove the S positioning ⑤.

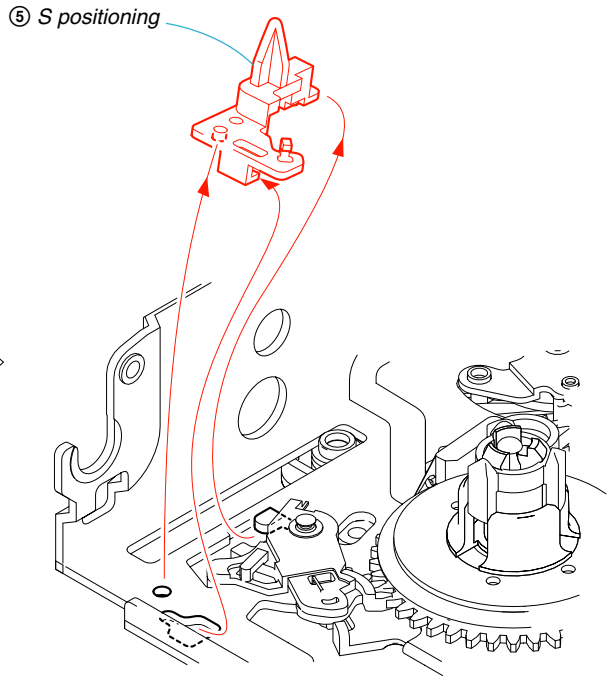
2. Attachment procedure

1) Insert the claw ④ of the S positioning ⑤ in the hole of the LS chassis.
2) Engage the claw ③ and the dowel.
3) Insert the tension coil spring (SB) ① into the hook of the S positioning ②.




Key Points in Re-assembling
S brake block ass'y
S positioning
Extension spring (SB)
(Be careful not to elongate the spring hook.)





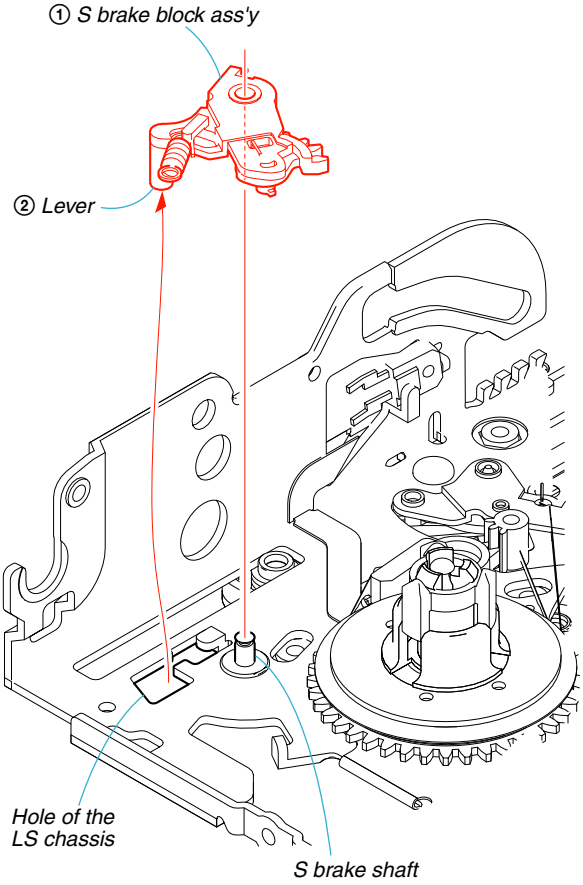
3-13. S Brake Block Ass'y

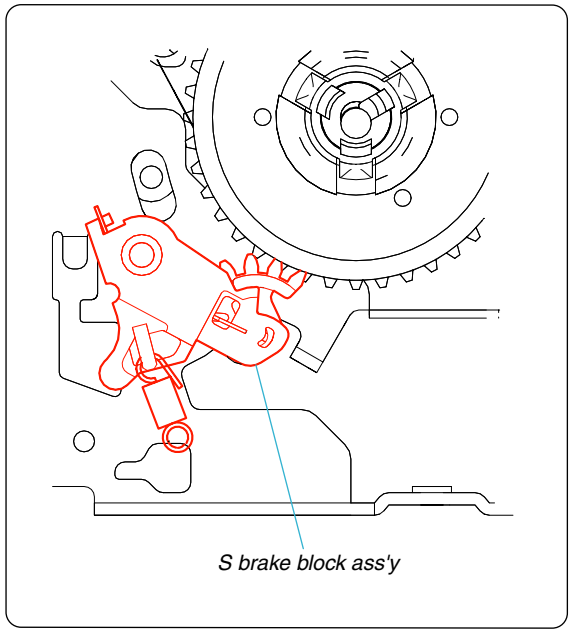
1. Removal procedure

1) Remove the S brake block ass'y ① from the S brake shaft.

2. Attachment procedure

1) Insert the lever ② of the S brake block ass'y into the hole of the LS chassis, and install the S brake block ass'y ① in the S brake shaft.





3-14. Tension Regulator Block Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ①.
2) Remove the tension regulator band ② from the S-reel table ass'y.
3) Remove the tension regulator spring ③.
   Note: Take a note where the tension regulator spring.
4) Remove the tension regulator block ass'y ④.

2. Attachment procedure

1) Apply grease into inside of the TG1 shaft hole.
   Amount of grease: A ball of grease of 1.0 mm diameter.
   Re-application of grease to the already-greased-point is not necessary.
2) While inserting the tension regulator cam lever into the groove of the cam base ass'y, insert the TG1 shaft into the TG1 shaft hole.
3) Hook the tension regulator spring ③ on the tension regulator ass'y ④ with the very end of the spring facing downward.
4) Hook the tension regulator spring ③ on the LS chassis.
   (The position that is taken a note when it is removed.)
5) Insert the tension regulator band ② into the groove of the S-reel table ass'y. While pushing the FWD ADJ with finger, fix it with the screw (special head screw M1.4 × 2.0) ①.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
6) By referring to Section 4-1, perform the TG1 FWD Position Adjustment.
7) By referring to Section 4-3, perform the FWD Back Tension Adjustment.

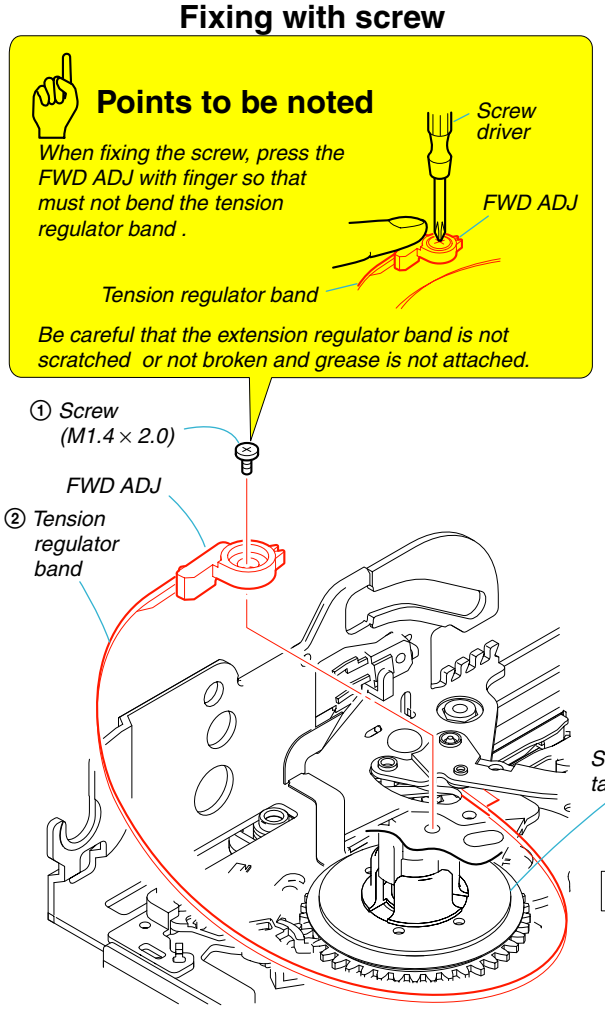
   Note: Be careful that the extension regulator band is not scratched or not broken and grease is not attached.

Fixing with screw

Points to be noted

When fixing the screw, press the FWD ADJ with finger so that must not bend the tension regulator band .

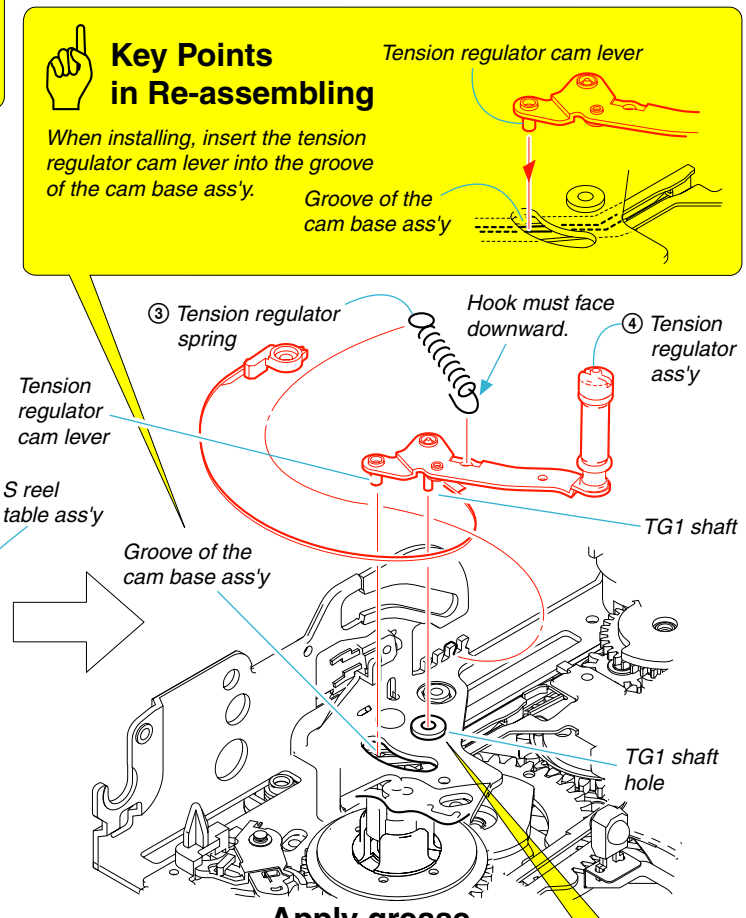
Be careful that the extension regulator band is not scratched or not broken and grease is not attached.



Tension regulator ass'y

Key Points in Re-assembling

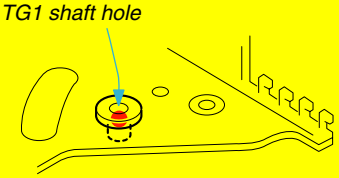
When installing, insert the tension regulator cam lever into the groove of the cam base ass'y.

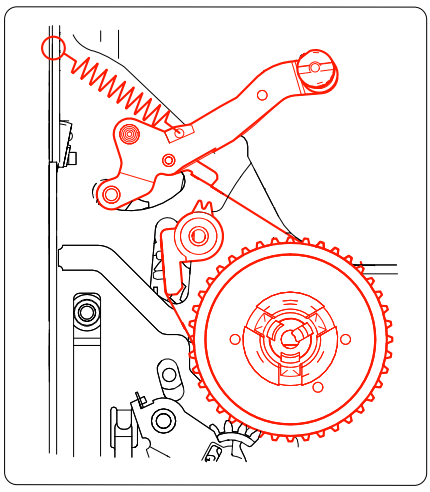

Tension regulator cam lever
Groove of the cam base ass'y
③ Tension regulator spring
Hook must face downward.
④ Tension regulator ass'y
Tension regulator cam lever
S reel table ass'y
TG1 shaft
Groove of the cam base ass'y
TG1 shaft hole

Apply grease

Points to be noted

Apply grease inside the hole of the TG1 shaft hole
Amount of grease:
A ball of grease of 1.0 mm diameter.
(Re-application of grease to the already-greased-point is not necessary.)





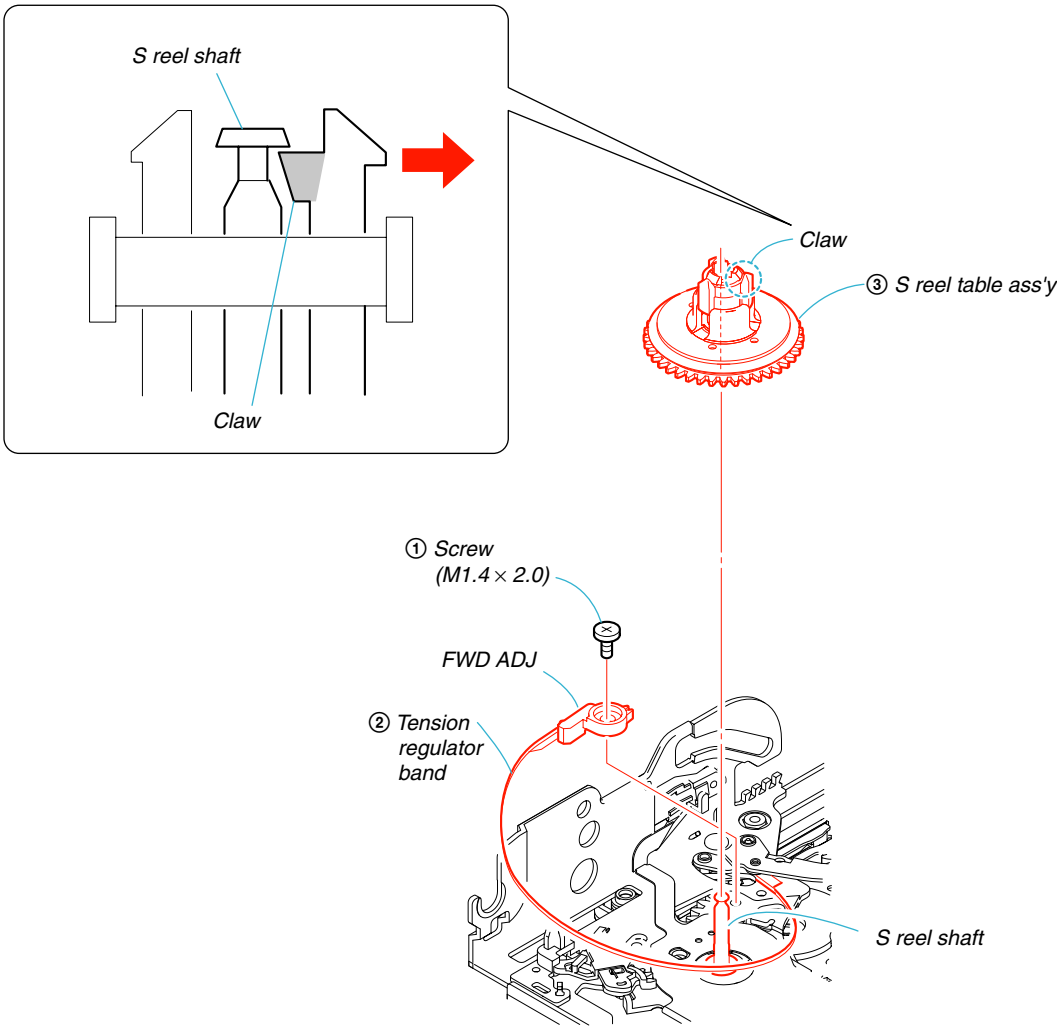
3-15. S Reel Table Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 2.0) ① .
2) Remove the tension regulator band ② from the S reel table ass'y.
3) While freeing the claw at the location in the direction of the arrow, remove the S reel table ass'y ③ from the S reel shaft.

2. Attachment procedure

1) Insert the S reel table ass'y ③ into the S reel shaft. While rotating it, snap it in. (Verify that it is locked.)
2) Insert the tension regulator band into the groove of the S reel table ass'y. While pushing the FWD ADJ with finger, fix it with the screw (special head screw M1.4 × 2.0) ①.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)



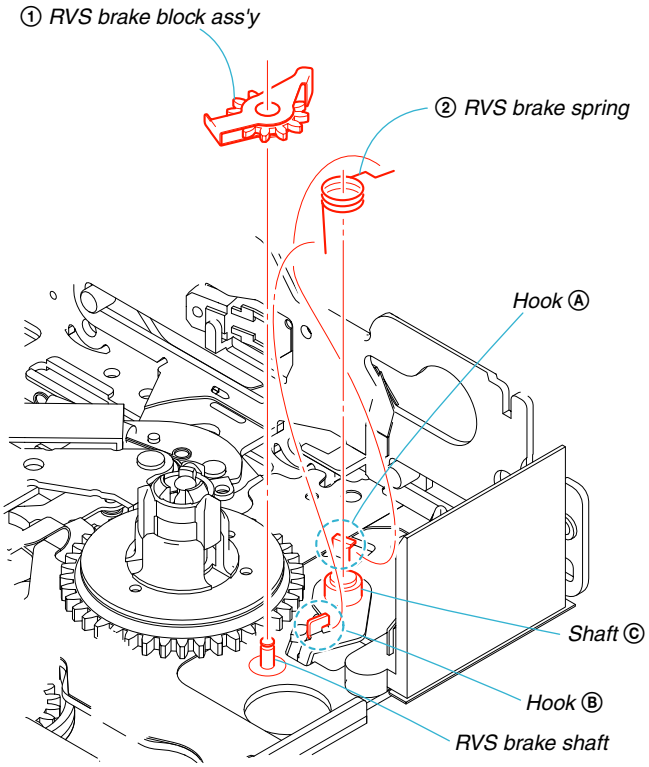
3-16. RVS Brake Block Ass'y

1. Removal procedure

1) Remove the RVS brake block ass'y ① from the RVS brake shaft.
2) Remove the RVS brake spring ② from the hooks Ⓐ and Ⓑ.

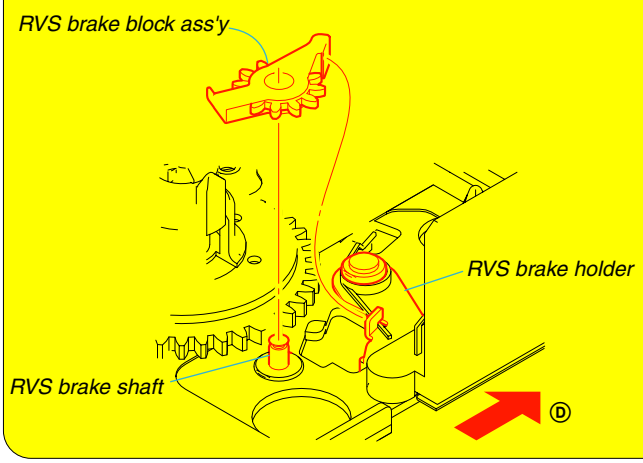
2. Attachment procedure

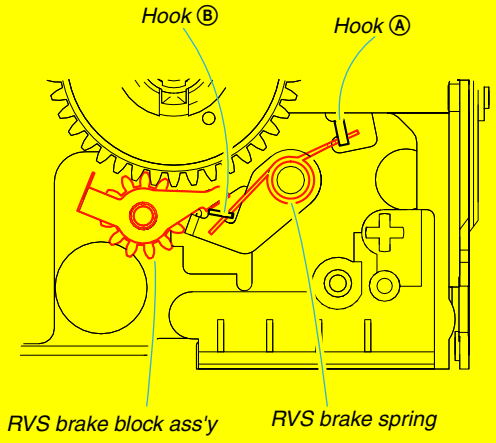
1) Install the RVS brake spring ② in the shaft Ⓒ, and engage the RVS brake spring ② on the hooks Ⓐ and Ⓑ.
2) Open the RVS brake holder in the direction of the arrow Ⓓ, and install the RVS brake block ass'y ① into the RVS brake shaft.



RVS brake block ass'y

Key Points in Re-assembling





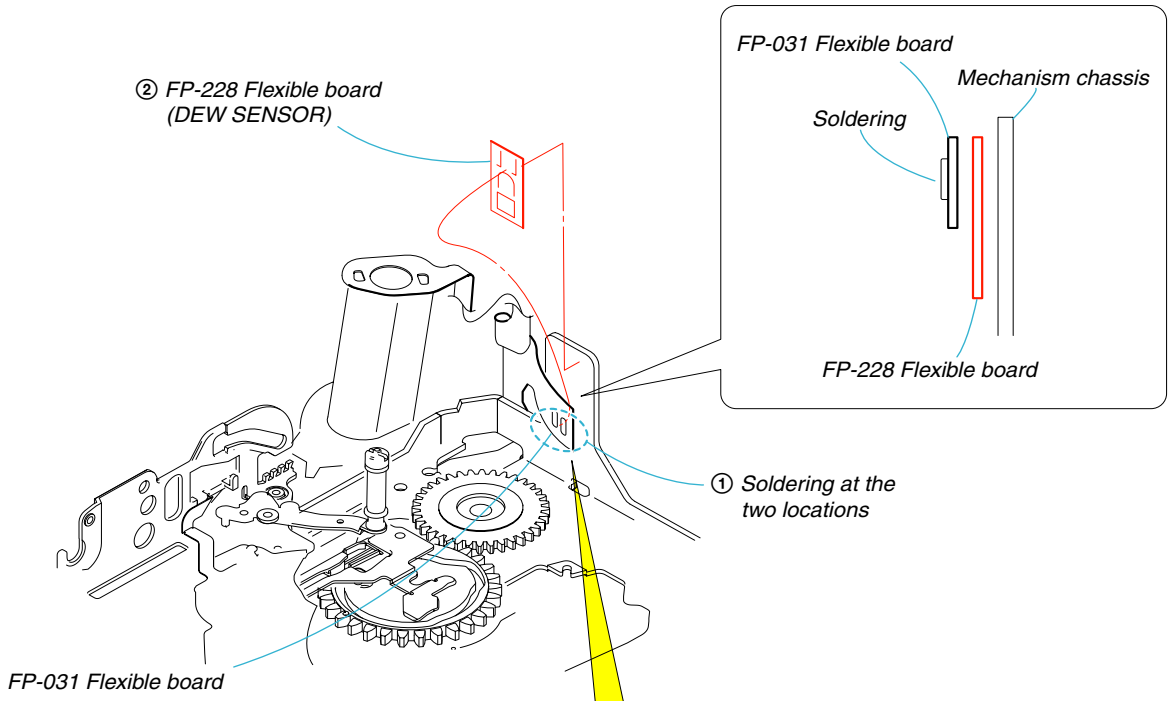
3-17. FP-228 Flexible Board

1. Removal procedure

1) Remove soldering at two locations ① on the FP-031 board and the FP-228 flexible board, and remove the FP-228 flexible board (DEW SENSOR) ② from the mechanism chassis.

2. Attachment procedure

1) Attach the FP-228 flexible board (DEW SENSOR) ② to the mechanism chassis and attach the FP-031 board to the FP-228 board.
2) Solder the terminal block at two locations ① on the FP-031 flexible board.



Soldering

Points to be noted

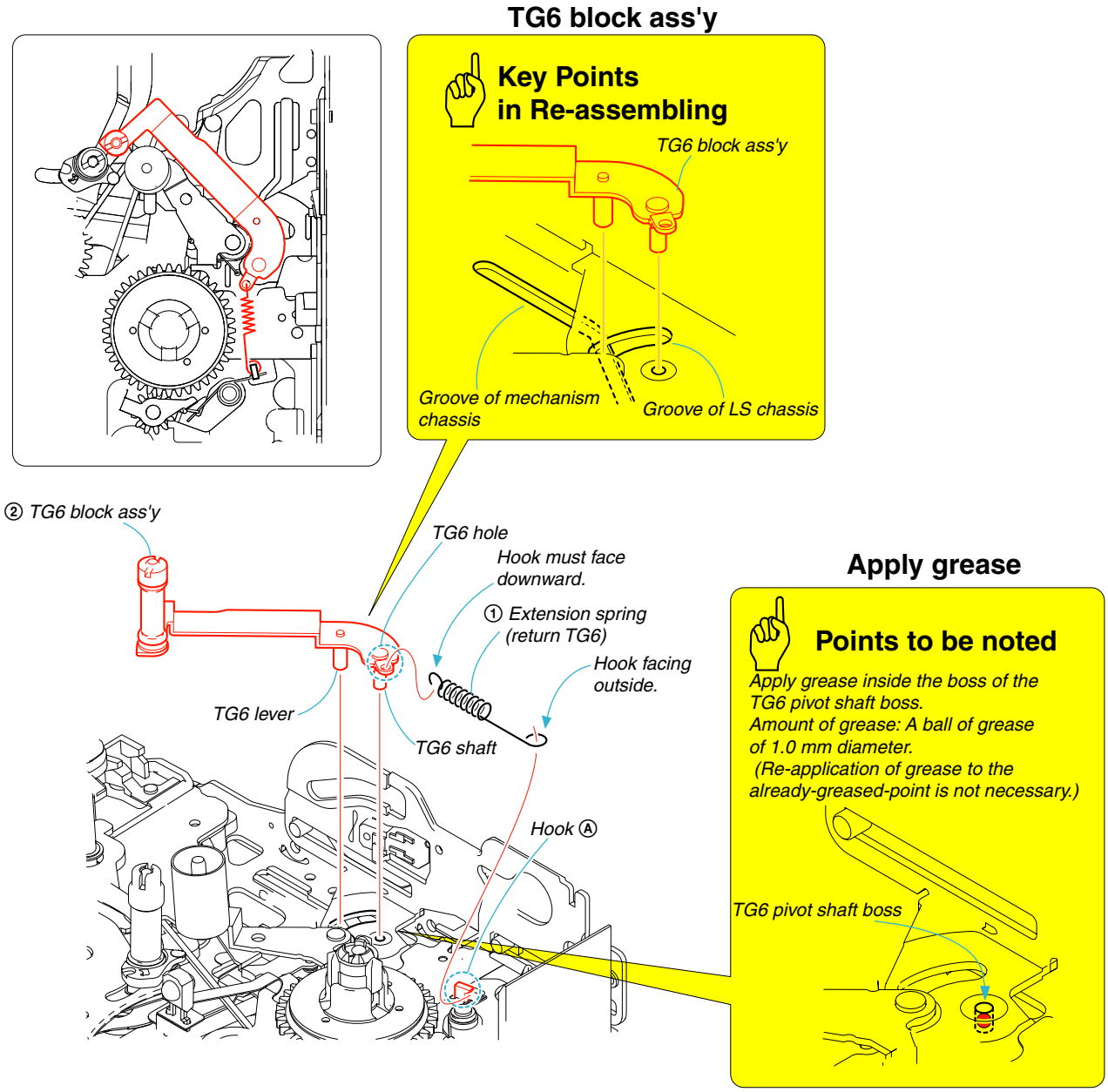
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering,
bridge formation, and the holder's claw must not be melt.

1. Removal procedure

1) Remove the extension spring (return TG6) ①.
2) Remove the TG6 block ass'y ②.

2. Attachment procedure

1) Apply grease inside the boss of the TG6 shaft hole.
   Amount of grease: A ball of grease of 1.0 mm diameter.
   Re-application of grease to the already-greased-point is not necessary.
2) Insert the TG6 shaft TG6 block ass'y ② in to the TG6 shaft hole. At the same time, insert the TG6 shaft lever into the groove of the LS chassis and that of the mechanism chassis.
3) Engage the extension spring (return TG6) ① on the hook Ⓐ and hole of the TG6.

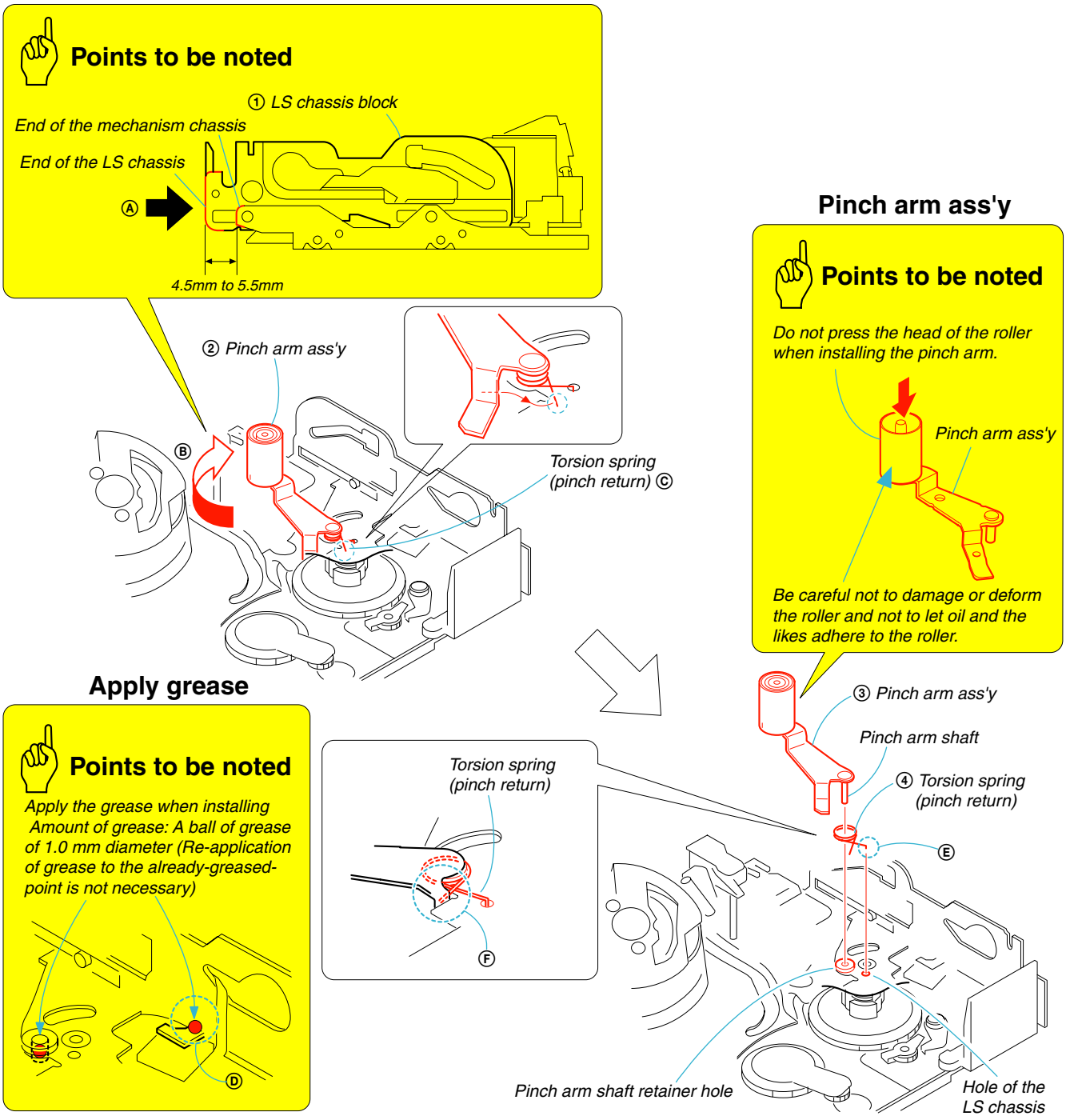

TG6 block ass'y
Key Points in Re-assembling
TG6 block ass'y
Groove of mechanism chassis
Groove of LS chassis
② TG6 block ass'y
TG6 hole
Hook must face downward.
① Extension spring (return TG6)
Hook facing outside.
TG6 lever
TG6 shaft
Hook Ⓐ
Apply grease
Points to be noted
Apply grease inside the boss of the TG6 pivot shaft boss.
Amount of grease: A ball of grease of 1.0 mm diameter.
(Re-application of grease to the already-greased-point is not necessary.)
TG6 pivot shaft boss

1. Removal procedure

1) Move the LS chassis in the direction of arrow Ⓐ so that the distance between the end of the LS chassis and end of the mechanism chassis is in the range of 4.5 mm to 5.5 mm.
2) Rotate the pinch arm ass'y ② in the direction of arrow Ⓑ, and remove the torsion spring (pinch return) Ⓒ.
3) Remove the pinch arm ass'y ③ , and remove the torsion spring (pinch return) ④.

2. Attachment procedure

1) Apply grease on the pinch arm shaft retainer hole and the portion Ⓓ of the LS chassis.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Move the LS chassis in the direction of arrow Ⓐ so that the distance between the end of the LS chassis and end of the mechanism chassis is in the range of 4.5 mm to 5.5 mm.
3) Insert the portion Ⓔ of the torsion spring (pinch return) ④ into the hole of the LS chassis, and attach it to the pinch arm shaft retainer hole.
4) Install the pinch arm ass'y ③ in the pinch arm shaft retainer hole.
5) Hook the torsion spring (pinch return) ④ on the pinch arm ass'y ③ as shown in Ⓕ.


Points to be noted
① LS chassis block
End of the mechanism chassis
End of the LS chassis
Ⓐ
4.5mm to 5.5mm
② Pinch arm ass'y
Ⓑ
Torsion spring (pinch return) Ⓒ
Pinch arm ass'y
Points to be noted
Do not press the head of the roller when installing the pinch arm.
Pinch arm ass'y
Be careful not to damage or deform the roller and not to let oil and the likes adhere to the roller.
Apply grease
Points to be noted
Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter (Re-application of grease to the already-greased-point is not necessary)
Ⓓ
Torsion spring (pinch return)
Ⓕ
③ Pinch arm ass'y
Pinch arm shaft
④ Torsion spring (pinch return)
Ⓔ
Pinch arm shaft retainer hole
Hole of the LS chassis

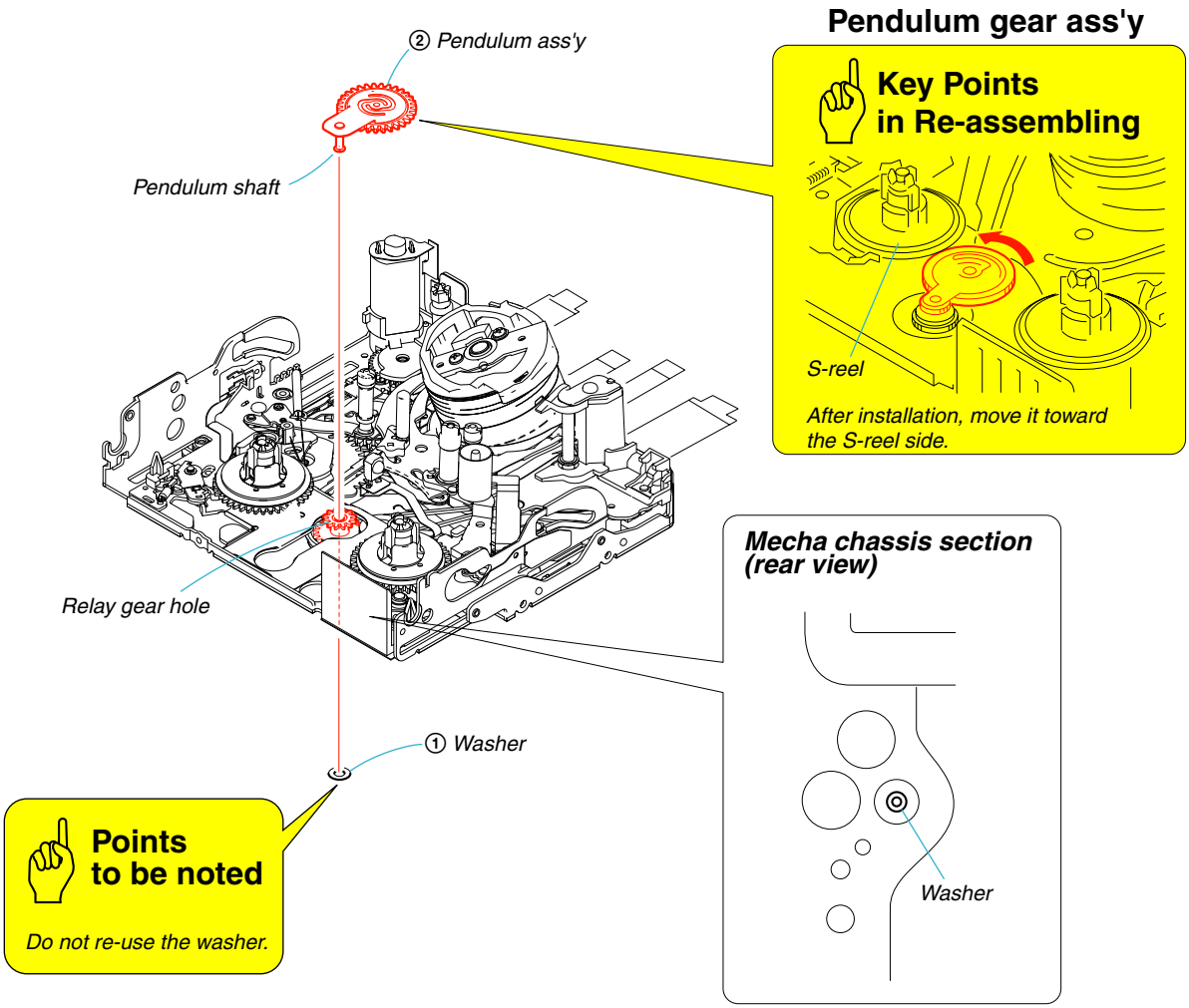
3-20. Pendulum Ass'y

1. Removal procedure

1) Remove the washer ① from the pendulum shaft.
2) Remove the pendulum ass'y ② from the relay gear hole.

2. Attachment procedure

1) Install the pendulum ass'y ② to the relay gear hole.
2) Install the washer ① to the pendulum shaft.
(Do not re-use the washer.)



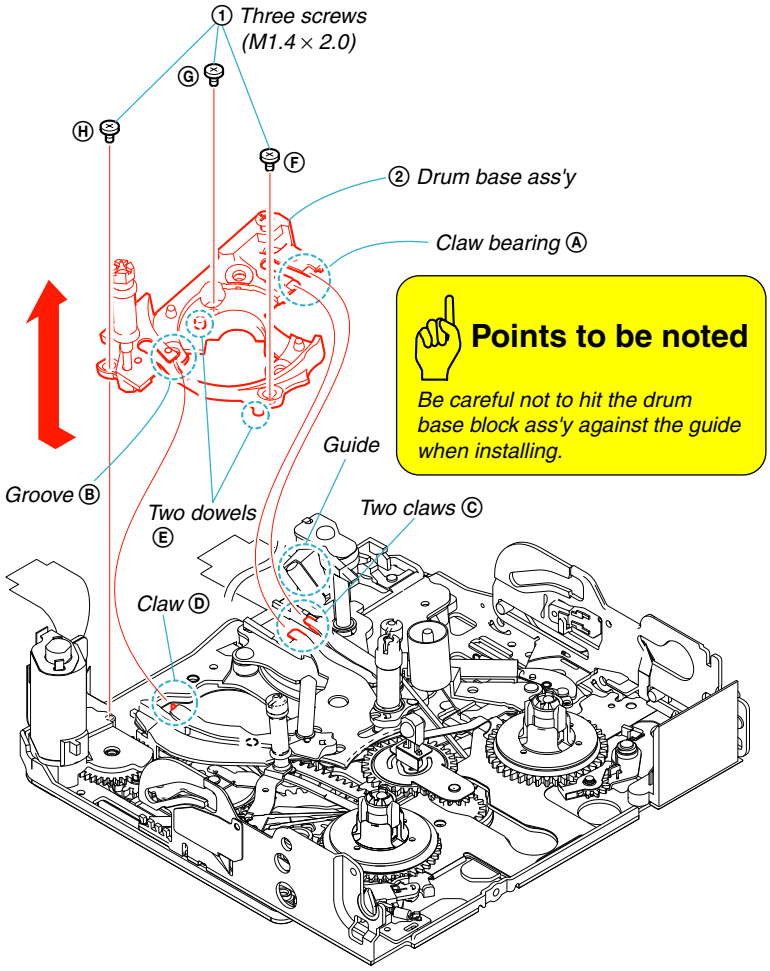
3-21. Drum Base Ass'y

1. Removal procedure

1) Enter the [ULE] mode.
2) Remove the three screws (special head screw M1.4 × 2.0) ①.
3) Remove the drum base ass'y ② in the direction of the arrow.

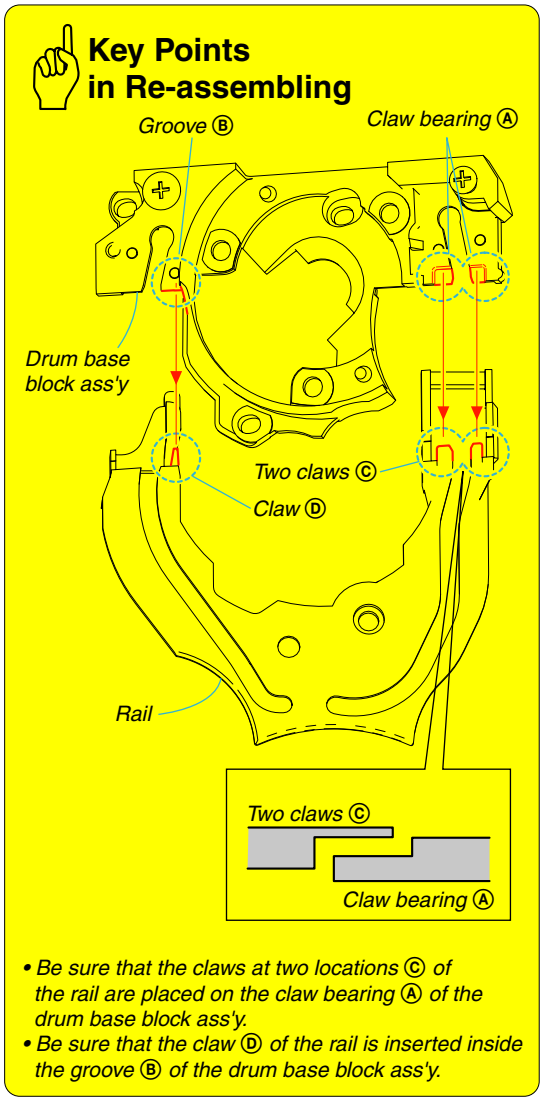
2. Attachment procedure

1) Install the claw bearing Ⓐ and then groove Ⓑ of the drum base ass'y ② in the claws Ⓒ in two locations and the claw Ⓓ of the rail, respectively.
2) Align the two dowels of the drum base ass'y at the Ⓔ position and install the drum base ass'y ②.
3) Install the three screws (special head screw M1.4 × 2.0) ① in the order of Ⓕ, Ⓖ and Ⓗ.
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
4) By referring to Section "4-2. LS Cam Adjustment", perform the LS Cam Adjustment.



Points to be noted

Be careful not to hit the drum base block ass'y against the guide when installing.



- *Be sure that the claws at two locations Ⓒ of the rail are placed on the claw bearing Ⓐ of the drum base block ass'y.*
- *Be sure that the claw Ⓓ of the rail is inserted inside the groove Ⓑ of the drum base block ass'y.*

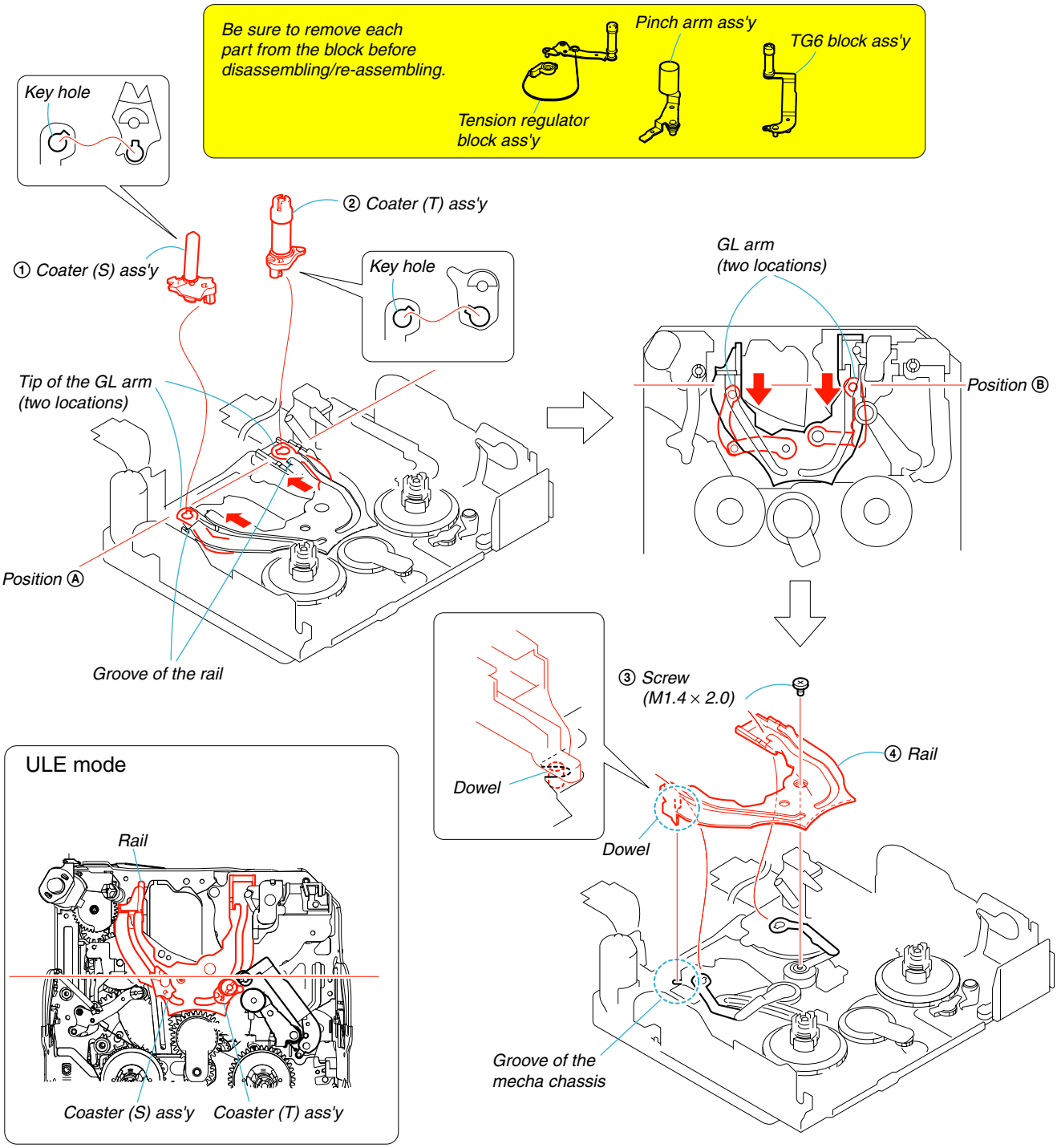
3-22. Coaster Ass'y, Rail

1. Removal procedure

1) Load the GL arms (two locations) until the tips of the arms reach the position Ⓐ.
2) While rotating the coaster (S) ass'y ① and the coaster (T) ass'y ②, remove them through the key hole at the tip of the GL arms (two locations).
3) Load the GL arms (two locations) until the tips of the arms reach the position Ⓑ.
4) Remove the screw (special head screw M1.4 × 2.0) ③, and remove the rail ④.

2. Attachment procedure

1) Set the dowel of the rail to the groove of the mecha chassis, and install the rail and install the screw (special head screw M1.4 × 2.0).
   Tightening torque: 0.04 ± 0.01 N•m (0.41 ± 0.1 kgf•cm)
2) Load the GL arms (two locations) until the tips of the arms reach the position Ⓐ.
3) While rotating the coaster (S) ass'y ① and the coaster (T) ass'y ②, install them in the key holes at the tips of the GL arms (two locations).
4) Return to the [ULE] mode.



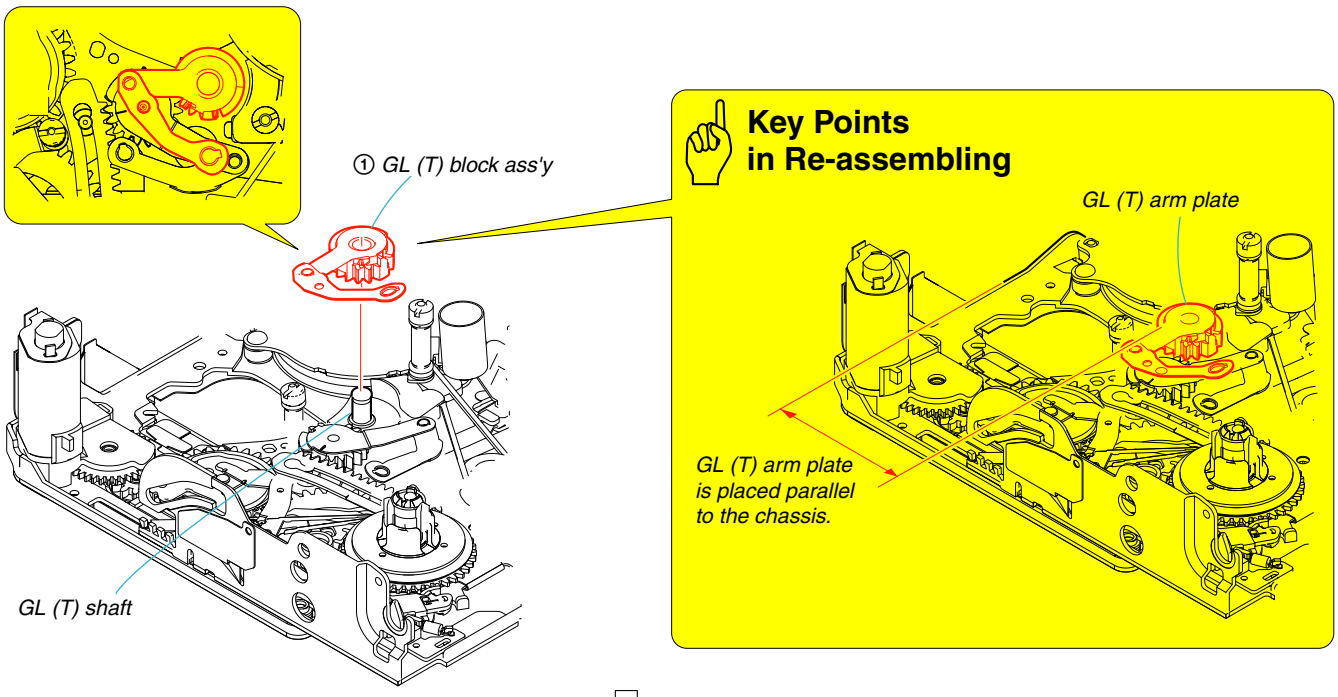
3-23. GL (T) Block Ass'y, GL Arm (S) Ass'y

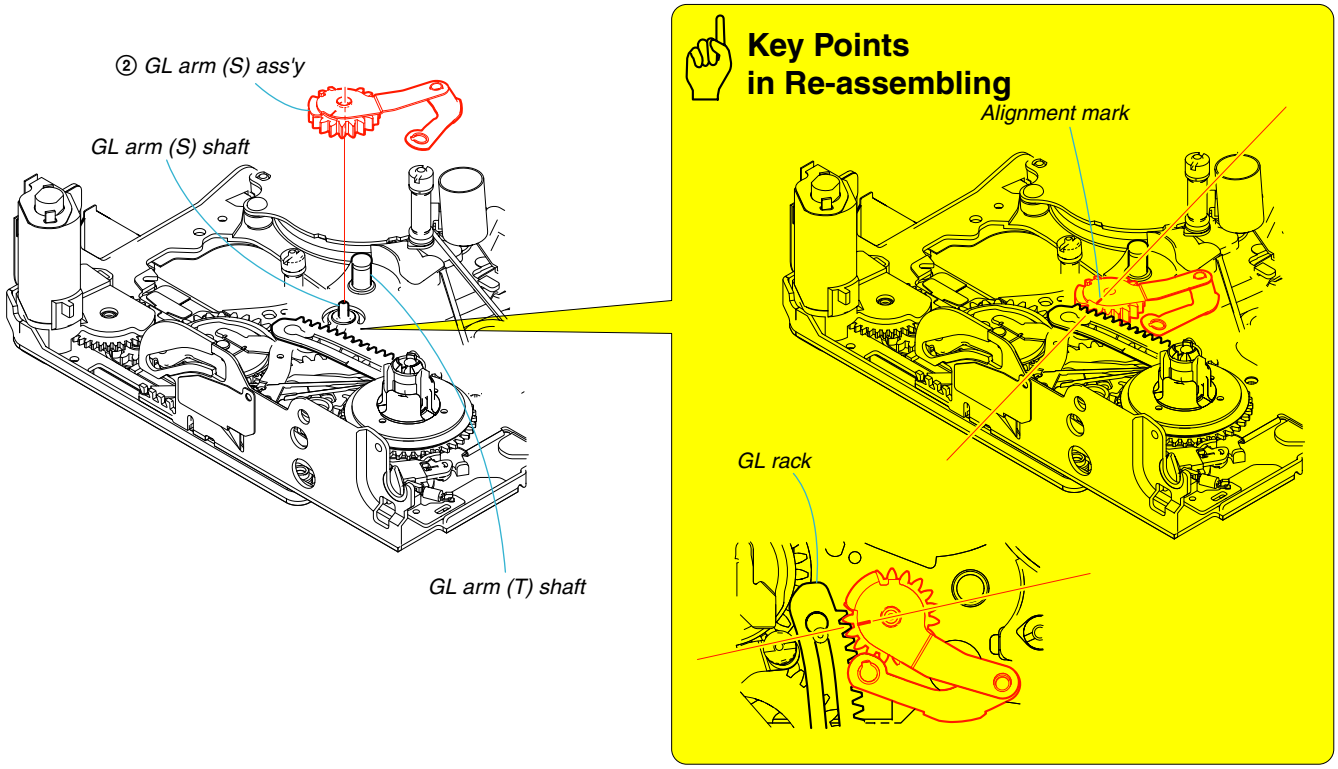
1. Removal

1) Remove the GL (T) block ass'y ① from the GL (T) shaft.
2) Remove the GL (S) block ass'y ② from the GL arm (S) shaft.

2. Attachment procedure

1) Enter the [ULE] mode.
2) Installing the GL arm (S) ass'y
   Install the GL arm (S) ass'y ② to the GL arm (S) shaft, while aligning the second gear of the GL rack with the phase alignment mark.
3) Installing the GL (T) block ass'y
   Install the GL (T) block ass'y ① to the GL (T) shaft, tin the way that the GL (T) arm plate of the GL (T) block ass'y ① is placed parallel to the chassis.





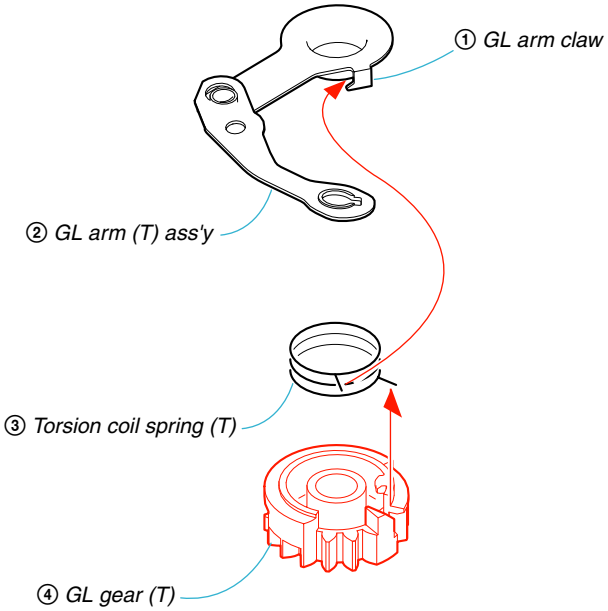
3-24. GL Gear (T)

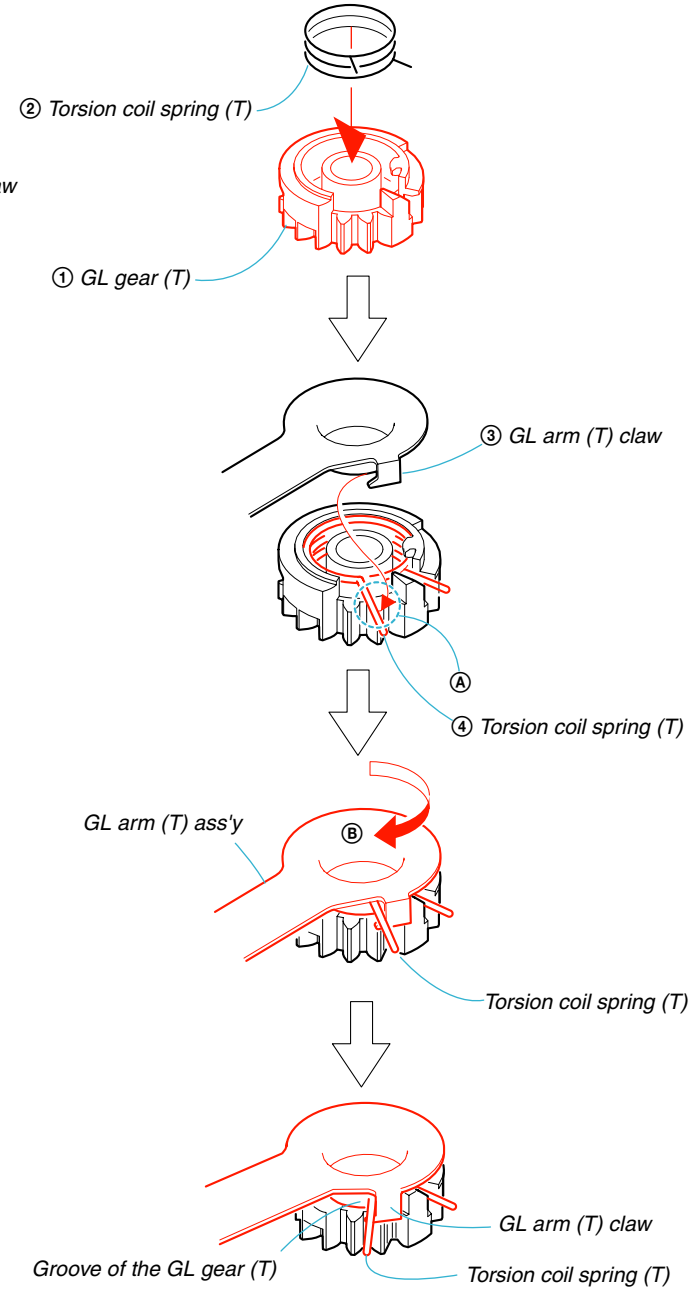
1. Removal procedure

1) Remove the GL arm claw ① in the direction of the arrow.
2) Remove the GL arm (T) ass'y ②.
3) Remove the GL torsion coil spring (T) ③ from the GL gear (T) ④.

2. Attachment procedure

1) Install the torsion coil spring (T) ② in the GL gear (T) ①.
2) Engage the GL arm (T) claw ③ in the Ⓐ portion of the torsion coil spring (T) ④.
3) Engage the GL arm (T) claw in the groove of the GL gear (T) by rotating the GL arm (T) ass'y in the direction of the arrow Ⓑ.

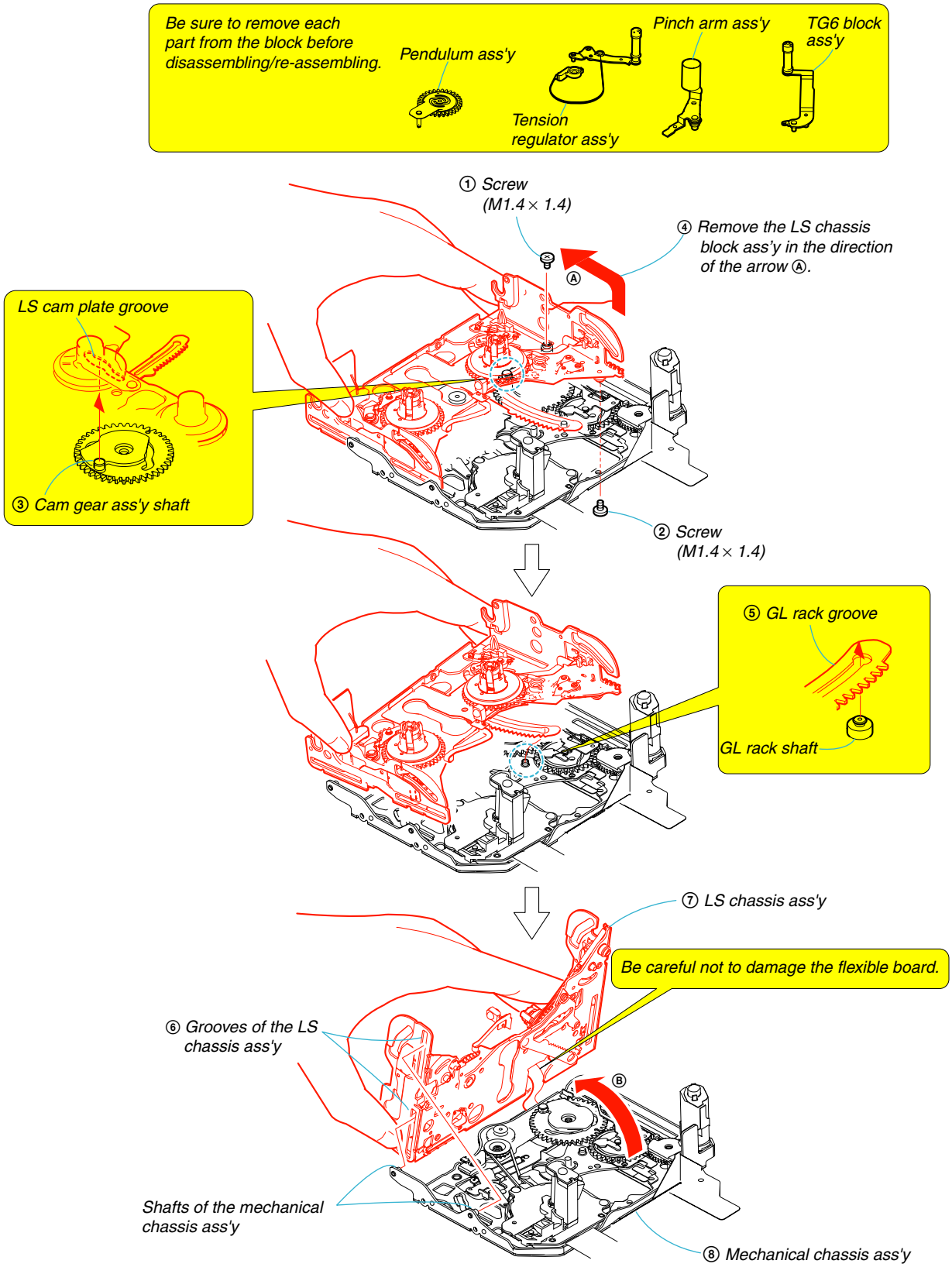




3-25. LS Chassis Block Ass'y, Mechanical Chassis Block Ass'y-1

1. Removal procedure

1) Enter the [ULE] mode.
2) Remove the screw (special head screw M1.4 × 1.4) ①.
3) Remove the screw (special head screw M1.4 × 1.4) ②.
4) Remove the cam gear ass'y shaft ③ from the LS cam plate groove of the LS chassis block ass'y.
5) Remove the LS chassis block ass'y ④ in the direction of the arrow Ⓐ.
6) Disengage the GL rack groove ⑤ of the LS chassis block from the GL rack shaft.
7) Disengage the grooves in two locations ⑥ of the LS chassis from the two shafts of the mechanical chassis.
8) Remove the LS chassis ass'y ⑦ from the mechanical chassis ass'y ⑧ in the direction of the arrow Ⓑ.


Be sure to remove each part from the block before disassembling/re-assembling.
Pendulum ass'y
Tension regulator ass'y
Pinch arm ass'y
TG6 block ass'y
① Screw (M1.4 × 1.4)
④ Remove the LS chassis block ass'y in the direction of the arrow Ⓐ.
Ⓐ
LS cam plate groove
③ Cam gear ass'y shaft
② Screw (M1.4 × 1.4)
⑤ GL rack groove
GL rack shaft
⑦ LS chassis ass'y
Be careful not to damage the flexible board.
⑥ Grooves of the LS chassis ass'y
Ⓑ
Shafts of the mechanical chassis ass'y
⑧ Mechanical chassis ass'y

3-26. LS Chassis Block Ass'y, Mechanical Chassis Block Ass'y-2

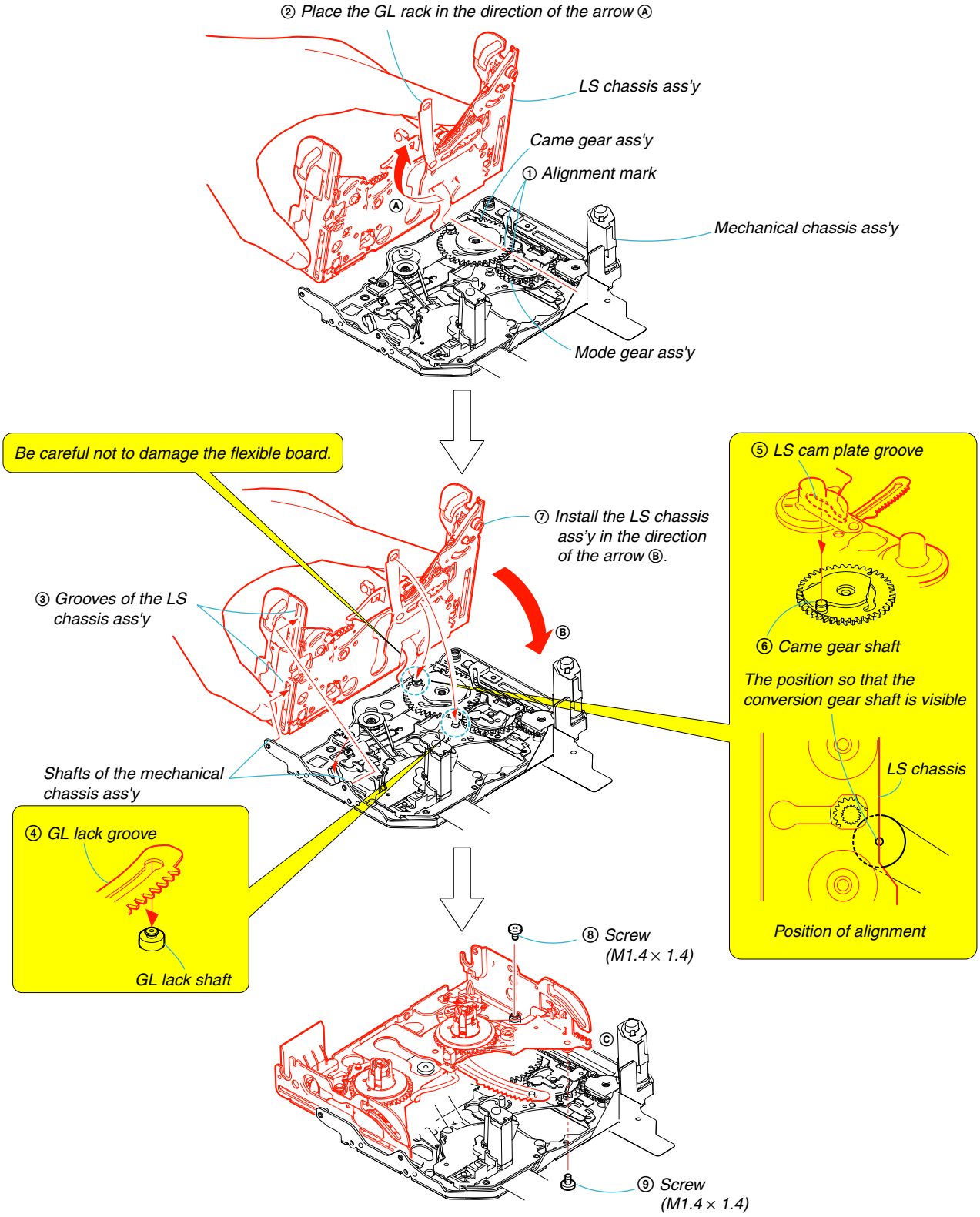
1. Attachment procedure

1) Enter the [ULE] mode.
2) Align the phase alignment mark ① of the cam gear ass'y and the mode gear ass'y of the mechanical chassis.
3) Place the GL rack ② in the direction of the arrow Ⓐ.
4) Insert the mechanical chassis shafts in two locations into the two grooves of the LS chassis block.
5) Insert the GL rack shaft in the GL rack groove ④.
6) Insert the cam gear shaft 6 in the LS cam plate groove ⑤.

Position of alignment

Slide the LS chassis to the position so that the conversion gear shaft is visible, and insert the cam gear shaft into the LS cam plate groove.

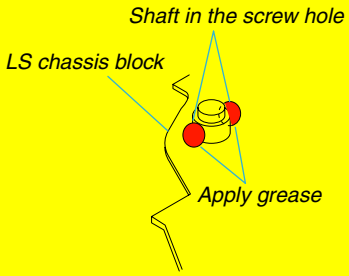
7) Install the LS chassis ass'y ⑦ in the direction of the arrow Ⓑ. (Check if the LS chassis is installed securely in each groove or shaft.)
8) Install the screw (special head screw M1.4 × 1.4) ⑧.
   Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
9) Install the screw (special head screw M1.4 × 1.4) ⑨.
   Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
10) By referring to Section "4-2. LS Cam Adjustment", perform the LS Cam Adjustment.

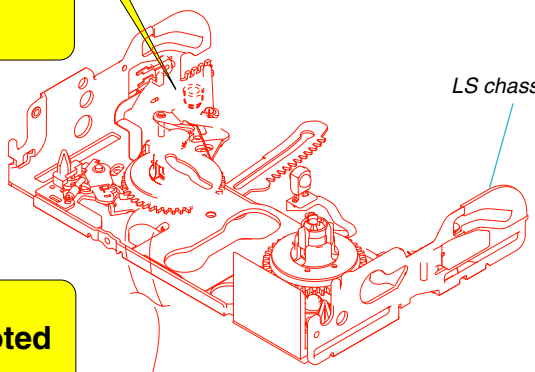

② Place the GL rack in the direction of the arrow Ⓐ
LS chassis ass'y
Came gear ass'y
① Alignment mark
Mechanical chassis ass'y
Mode gear ass'y
Be careful not to damage the flexible board.
⑦ Install the LS chassis ass'y in the direction of the arrow Ⓑ.
③ Grooves of the LS chassis ass'y
Shafts of the mechanical chassis ass'y
④ GL lack groove
GL lack shaft
⑤ LS cam plate groove
⑥ Came gear shaft
The position so that the conversion gear shaft is visible
LS chassis
Position of alignment
⑧ Screw (M1.4 × 1.4)
⑨ Screw (M1.4 × 1.4)

Apply grease

Points to be noted

Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter

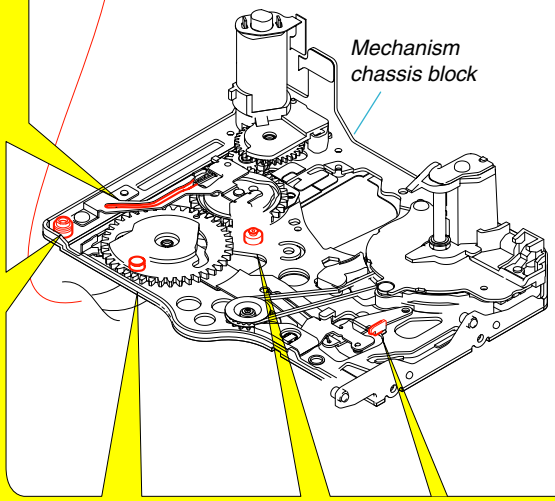


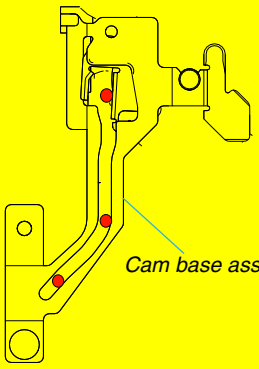


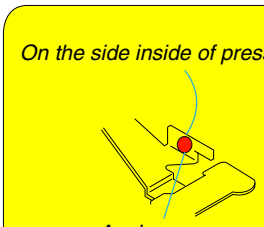
Apply grease

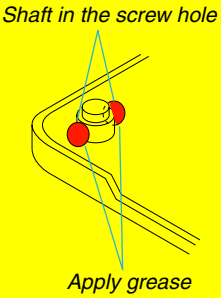
Points to be noted

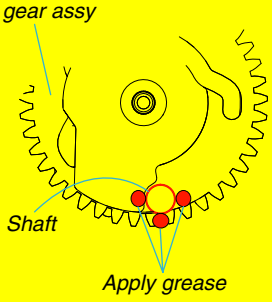
Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter

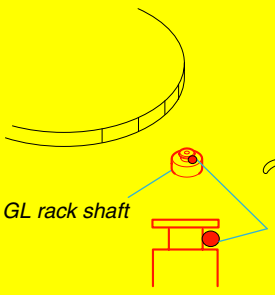












Apply grease on the sliding surface of the GL rack shaft and the GL rack groove.

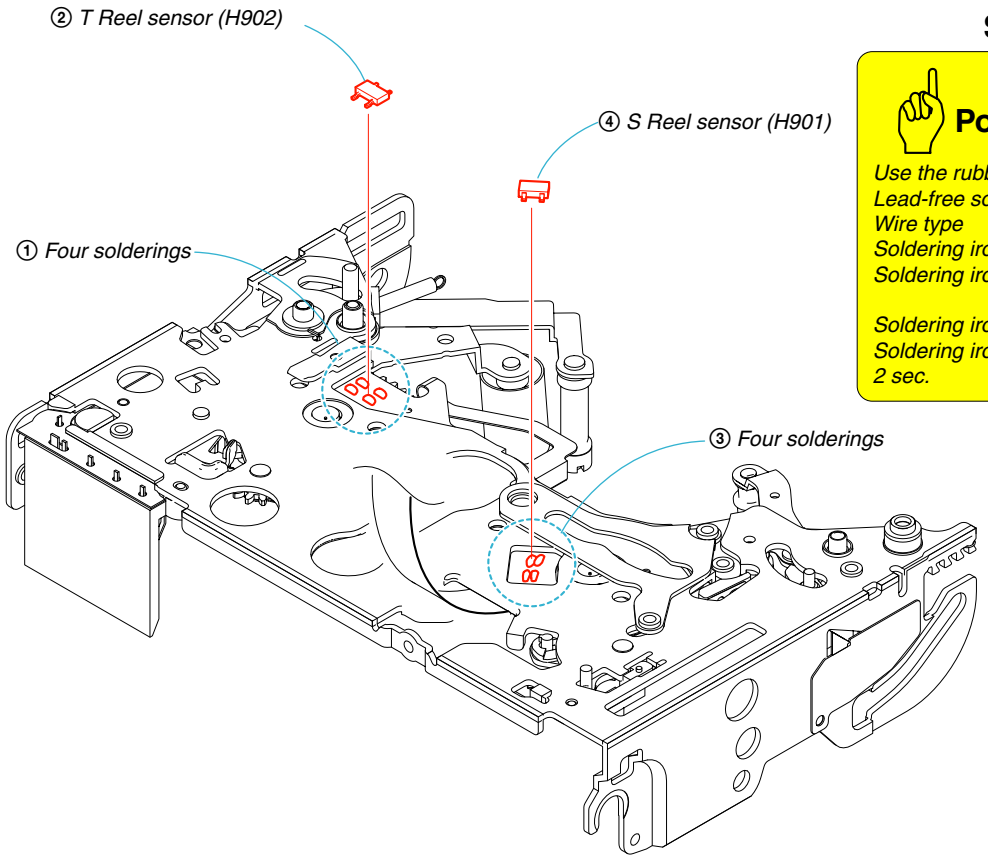
3-27. T Reel Sensor (H902), S Reel Sensor (H901)

1. Removal procedure

1) Remove soldering at the four locations ① of the T reel sensor, and remove the T reel sensor (H902) ②.
2) Remove soldering at the four locations ③ S reel sensor, and remove the S reel sensor (H901) ④.

2. Attachment procedure

1) Solder four locations ③ S reel sensor and install the S reel sensor (H901) ④ in the FP-031 flexible board.
2) Solder four locations ① S reel sensor and install the T reel sensor (H902) ② in the FP-031 flexible board.



Soldering

Points to be noted

Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC

Soldering iron tip temperature: 300 ±10 ∞C
Soldering iron tip contacting time within 2 sec.

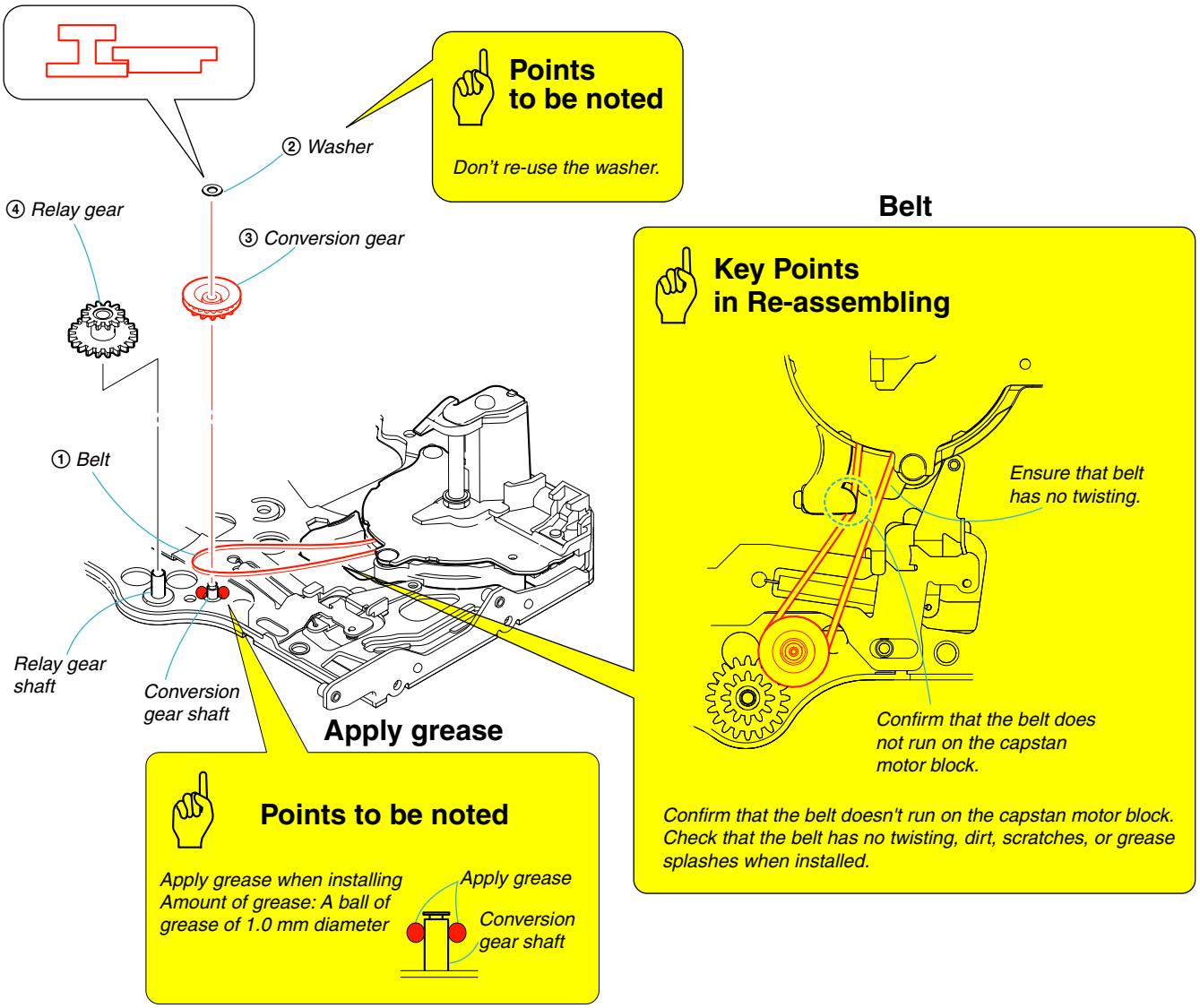
3-28. Relay Gear, Conversion Gear

1. Removal procedure

1) Remove the belt ① from the conversion gear.
2) Remove the washer ② from the conversion gear shaft.
3) Remove the conversion gear ③.
4) Remove the relay gear ④.

2. Attachment procedure

1) Apply grease on the relay gear shaft.
   Amount of grease: A ball of grease of 0.5 mm diameter.
2) Apply grease on the conversion gear shaft.
   Amount of grease: A ball of grease of 1.0 mm diameter.
3) Install the conversion gear ③ in the relay gear shaft.
4) Install the washer ② in the conversion gear shaft (Don't re-use the washer)
5) Hook the belt ① on the conversion gear and install it while rotating the conversion gear.


Points to be noted
Don't re-use the washer.
② Washer
④ Relay gear
③ Conversion gear
① Belt
Relay gear shaft
Conversion gear shaft
Apply grease
Belt
Key Points in Re-assembling
Ensure that belt has no twisting.
Confirm that the belt does not run on the capstan motor block.
Confirm that the belt doesn't run on the capstan motor block. Check that the belt has no twisting, dirt, scratches, or grease splashes when installed.
Points to be noted
Apply grease when installing Amount of grease: A ball of grease of 1.0 mm diameter
Apply grease
Conversion gear shaft

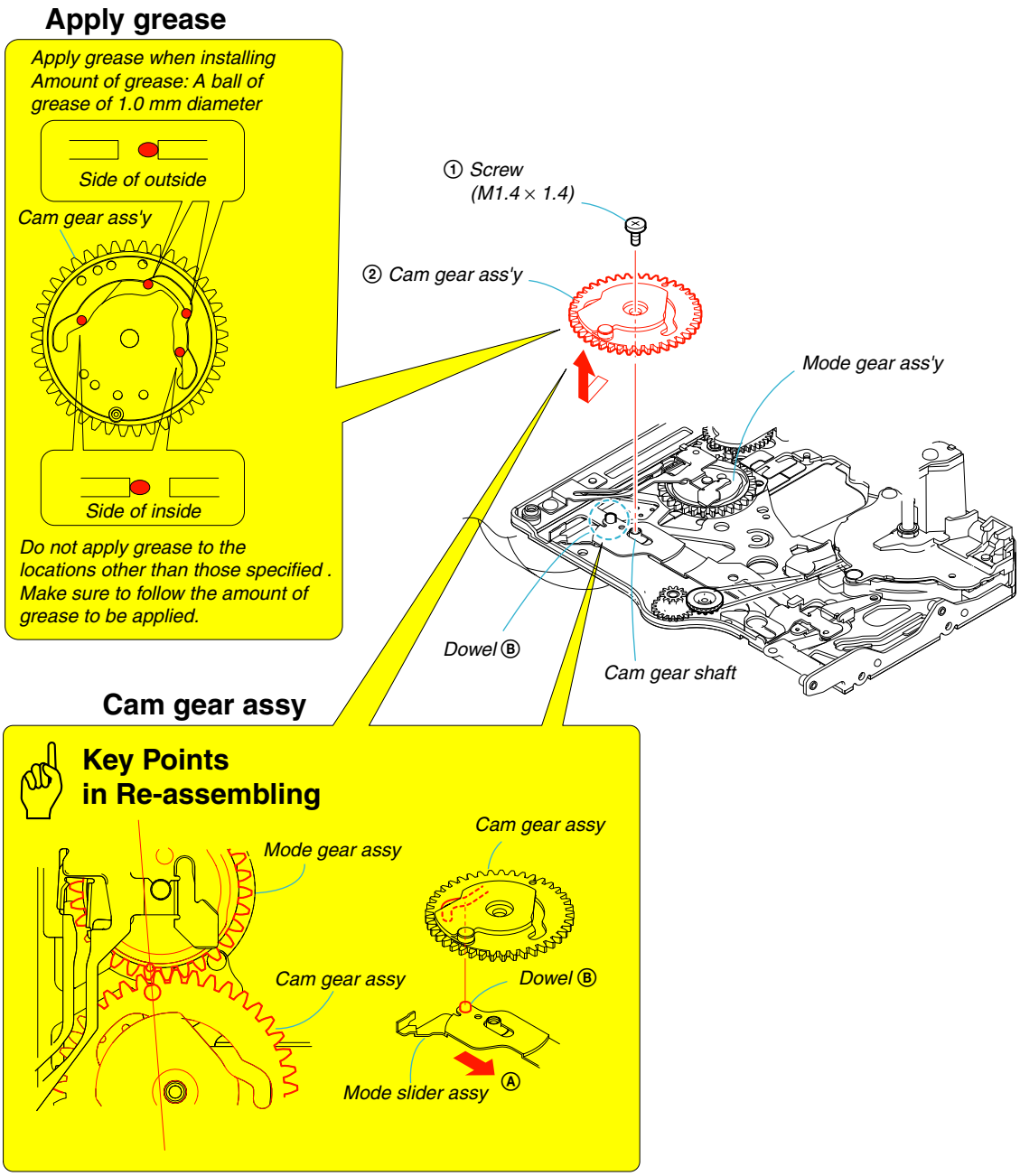
3-29. Cam Gear Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 1.4) ①.
2) Remove the cam gear ass'y ② from the cam gear shaft.

2. Attachment procedure

1) Apply grease on the specified locations of the cam gear ass'y ②.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Move the mode slider ass'y in the direction of arrow Ⓐ as far as it can go.
3) Align the gear phase of the mode gear ass'y and the cam gear ass'y ②.
4) Install the cam gear ass'y ② while engaging the dowel Ⓑ of the mode slider ass'y into the groove of the cam gear ass'y.
5) Install the screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.04 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)


Apply grease
Apply grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter
Side of outside
Cam gear ass'y
Side of inside
Do not apply grease to the locations other than those specified . Make sure to follow the amount of grease to be applied.
① Screw (M1.4 × 1.4)
② Cam gear ass'y
Mode gear ass'y
Dowel Ⓑ
Cam gear shaft
Cam gear assy
Key Points in Re-assembling
Mode gear assy
Cam gear assy
Cam gear assy
Dowel Ⓑ
Mode slider assy
Ⓐ

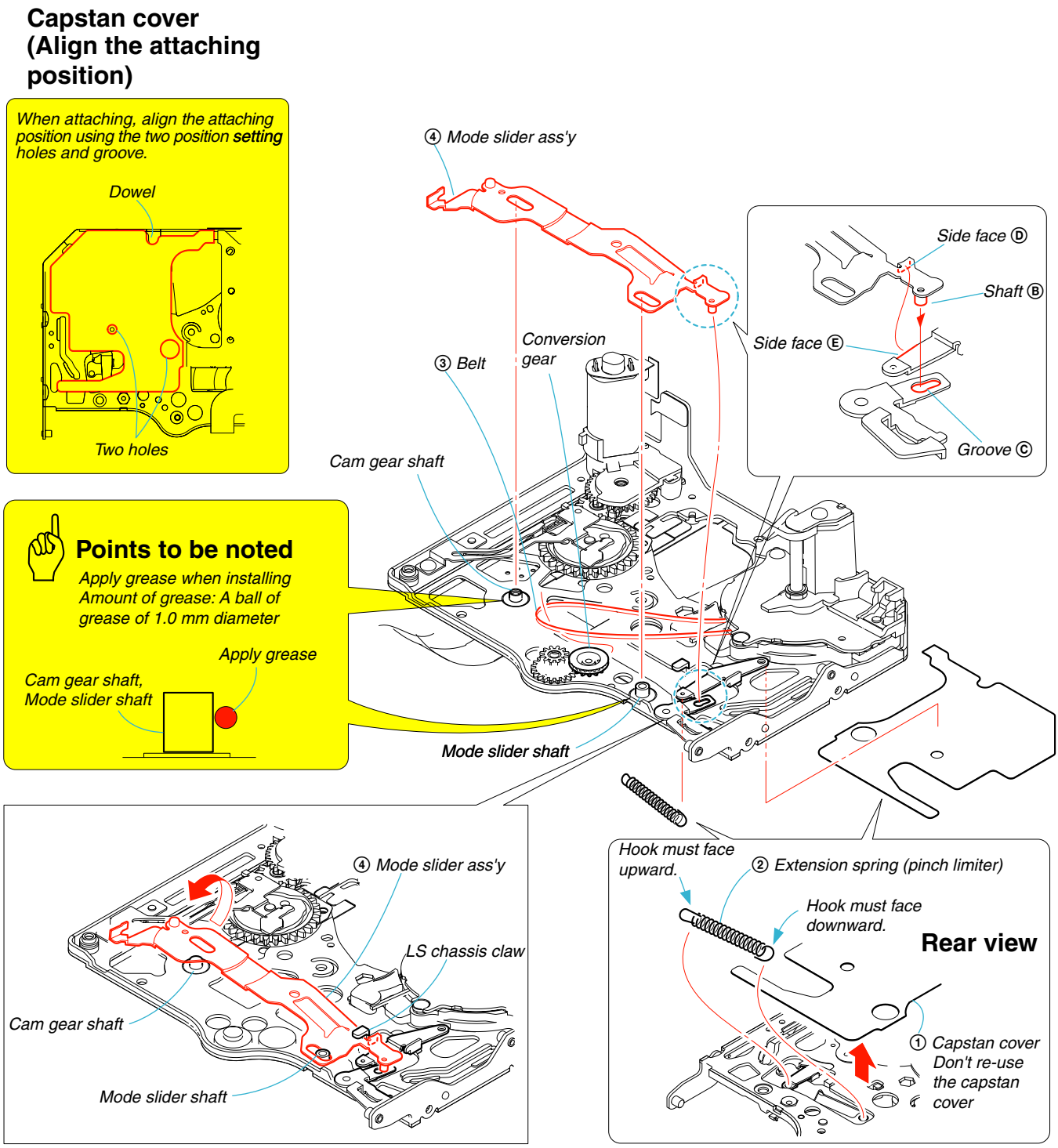
3-30. Mode Slider Ass'y

1. Removal procedure

1) Remove the capstan cover ① and remove the extension spring (pinch limiter) ②.
2) Remove the belt ③ from the conversion gear.
3) Remove the mode slider ass'y ④ from the cam gear shaft in the direction of the arrow.

2. Attachment procedure

1) Apply grease on the cam gear shaft and the mode slider shaft.
   Amount of grease: A ball of grease of 1.0 mm diameter.
2) Engage the shaft Ⓑ in the groove Ⓒ and install the mode slider ass'y ④ while aligning its side Ⓓ and Ⓔ engage it in the claw of the LS chassis, then install the mode slider ass'y ④.
3) Hook the belt ③ on the conversion gear and install it while rotating the conversion gear.
4) Install the extension spring (pinch limiter) ② while being careful of the orientation of the hook.
5) And attach the capstan cover ①. (Don't re-use the capstan cover.)


Capstan cover (Align the attaching position)
When attaching, align the attaching position using the two position setting holes and groove.
Dowel
Two holes
④ Mode slider ass'y
Side face Ⓓ
Shaft Ⓑ
Side face Ⓔ
Groove Ⓒ
③ Belt
Conversion gear
Cam gear shaft
Points to be noted
Apply grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter
Apply grease
Cam gear shaft, Mode slider shaft
Mode slider shaft
④ Mode slider ass'y
LS chassis claw
Cam gear shaft
Mode slider shaft
Hook must face upward.
② Extension spring (pinch limiter)
Hook must face downward.
Rear view
① Capstan cover Don't re-use the capstan cover

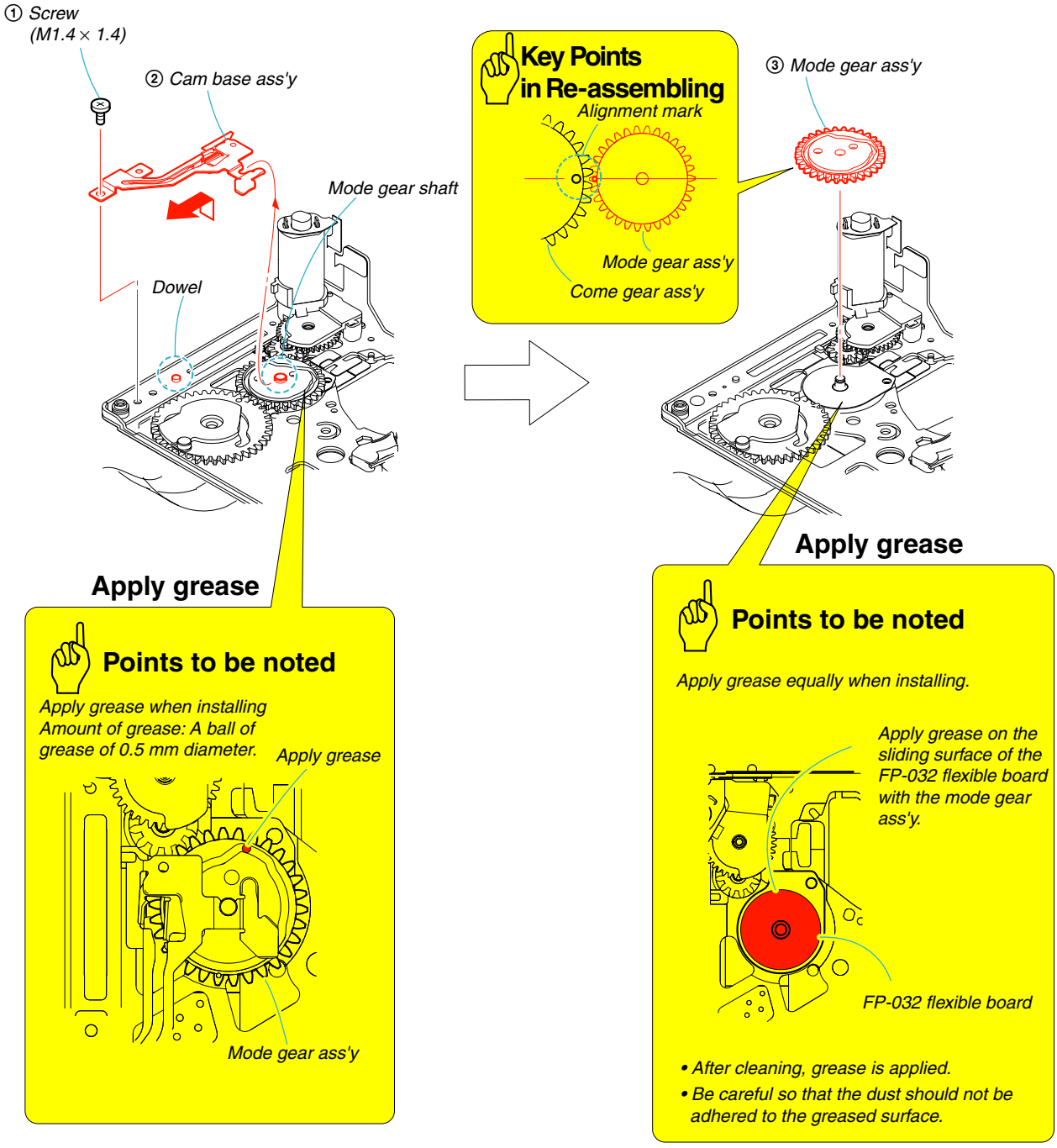
3-31. Cam Gear Ass'y, Mode Gear Ass'y

1. Removal procedure

1) Remove the screw (special head screw M1.4 × 1.4) ①.
2) Remove the dowel from the cam base ass'y ②. Slide the cam base ass'y ②, and remove the pin Ⓒ, and remove the cam base ass'y ②.
3) Remove the mode gear ass'y ③.

2. Attachment procedure

1) Apply grease equally on the sliding surface of the FP-032 flexible board and the mode gear ass'y.
2) Install the mode gear ass'y ③.
3) Install the cam base ass'y ② while engaging it in the pin Ⓒ and the dowel.
4) Install the screw (special head screw M1.4 × 1.4) ①.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm))
5) Apply grease on the specified locations of the mode gear ass'y.
   Amount of grease: A ball of grease of 0.5 mm diameter.


① Screw
(M1.4 × 1.4)
② Cam base ass'y
Mode gear shaft
Dowel
Apply grease
Points to be noted
Apply grease when installing
Amount of grease: A ball of grease of 0.5 mm diameter.
Apply grease
Mode gear ass'y
Key Points in Re-assembling
Alignment mark
Mode gear ass'y
Come gear ass'y
③ Mode gear ass'y
Apply grease
Points to be noted
Apply grease equally when installing.
Apply grease on the sliding surface of the FP-032 flexible board with the mode gear ass'y.
FP-032 flexible board
• After cleaning, grease is applied.
• Be careful so that the dust should not be adhered to the greased surface.

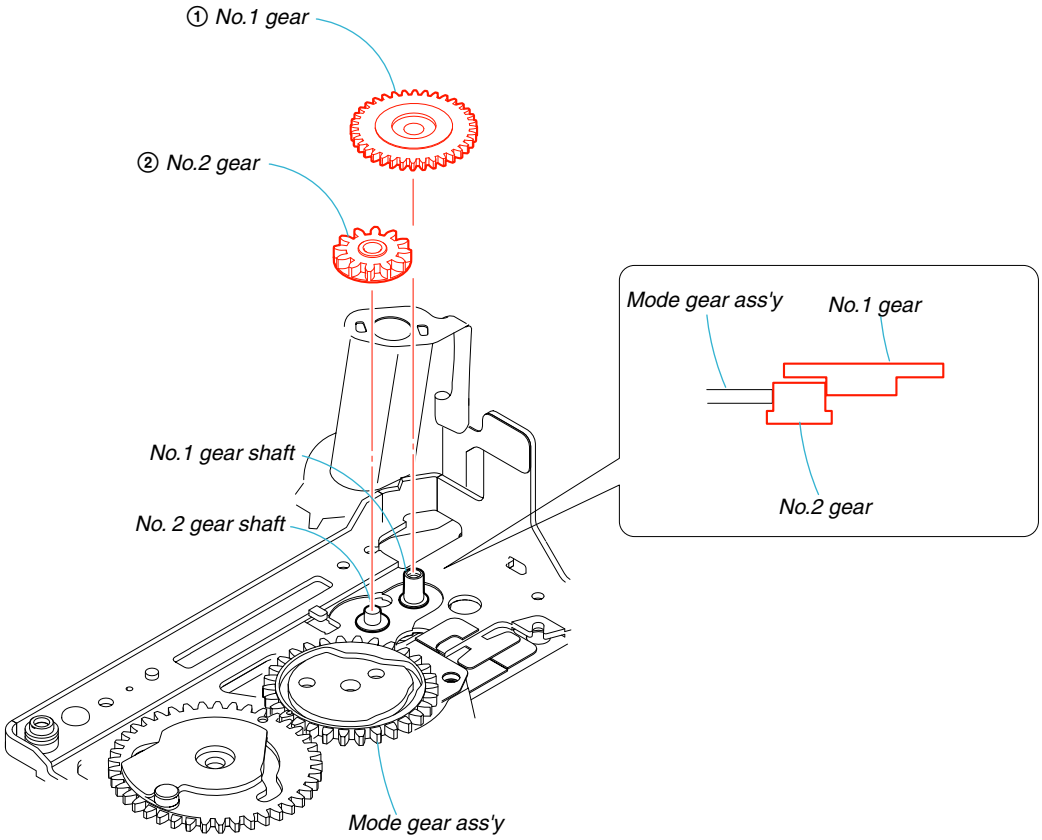
3-32. No. 1 Gear, No. 2 Gear

1. Removal procedure

1) Remove the No. 1 gear ① from the No. 1 gear shaft.
2) Remove the No. 2 gear ② from the No. 2 gear shaft.

2. Attachment procedure

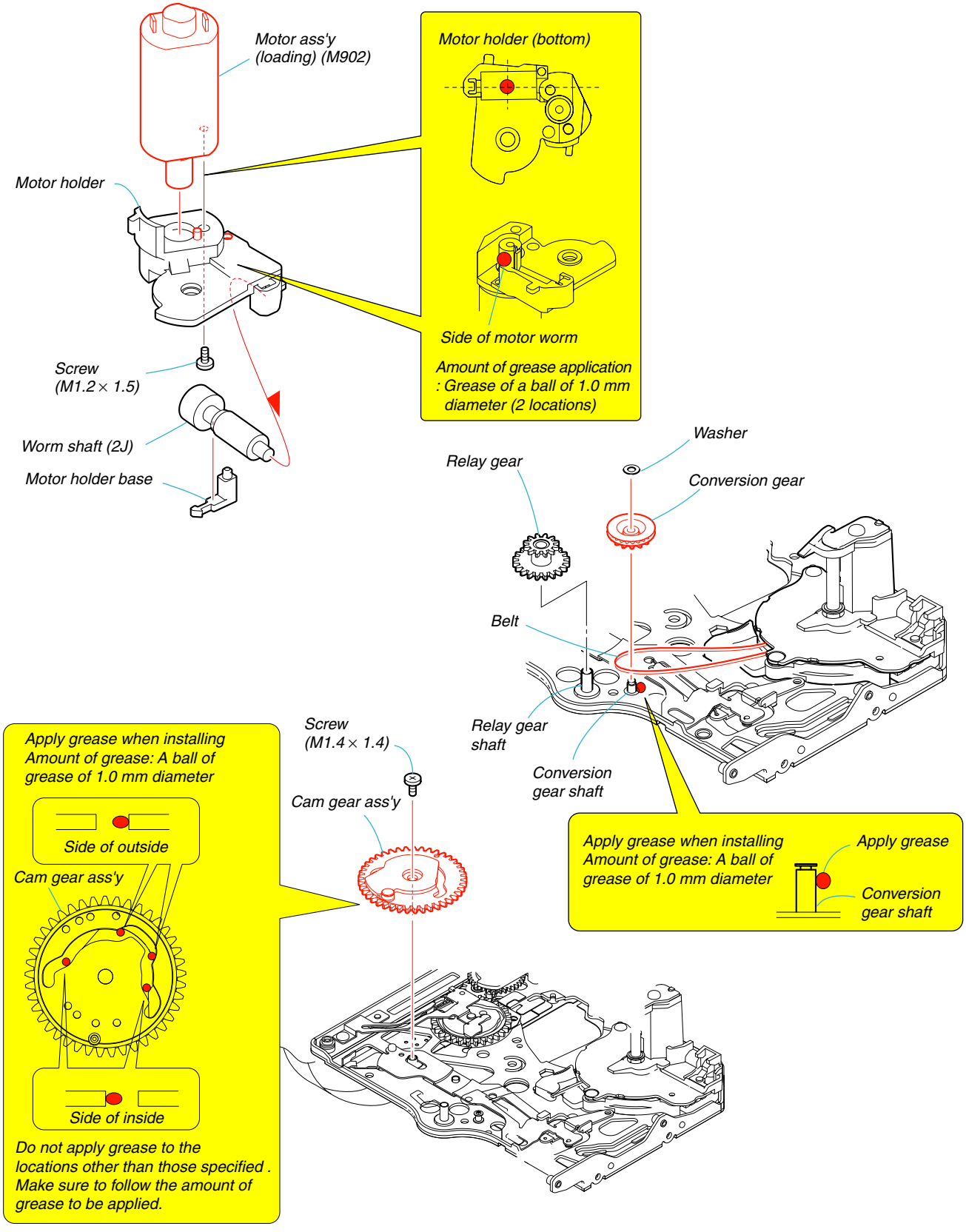
1) Install the No. 2 gear ② in the No. 2 gear shaft.
2) Install the No. 1 gear ① in the No. 1 gear shaft.



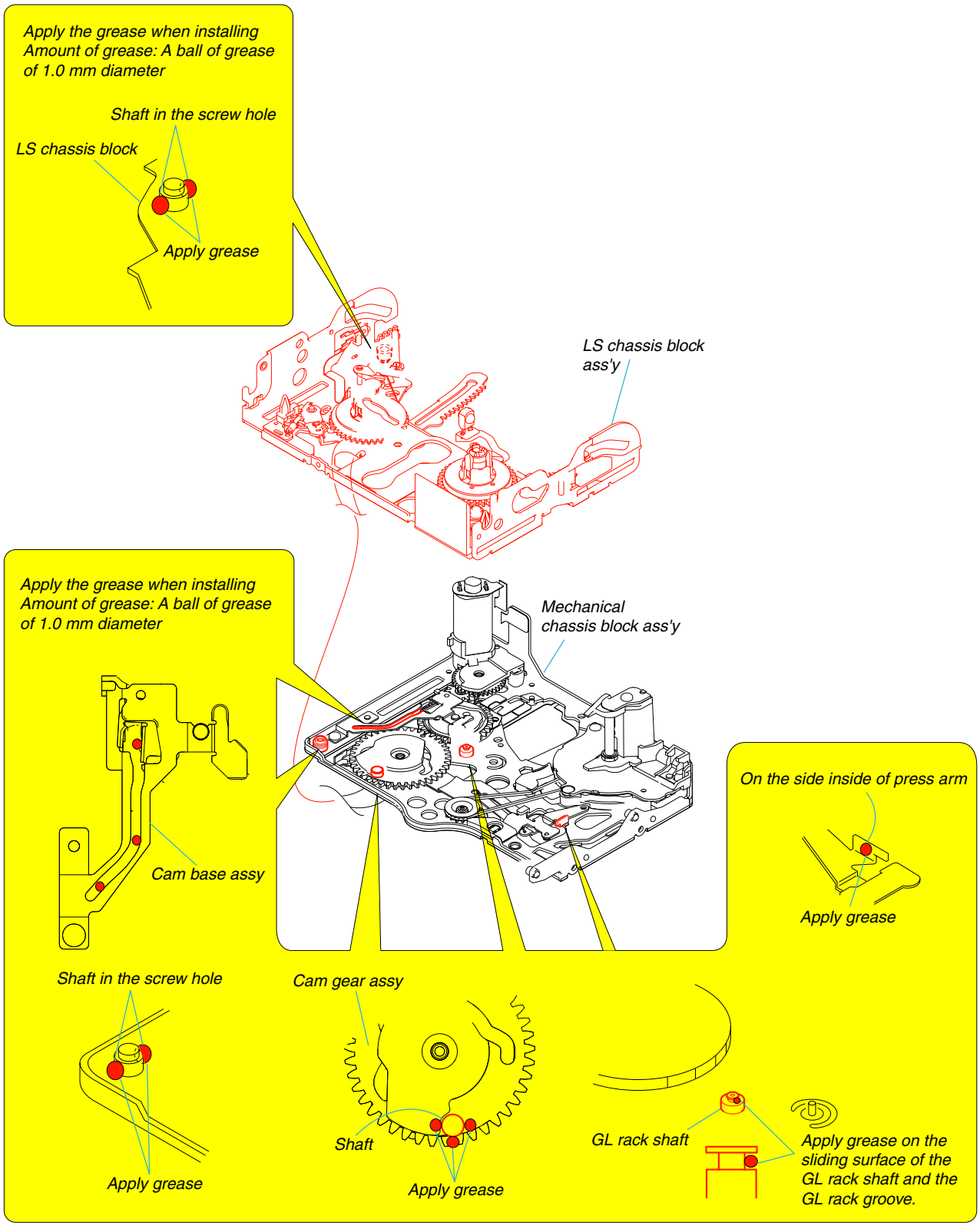
HELP

Application of grease, soldering method and precautions, and phase matching adjustment are compiled and below.

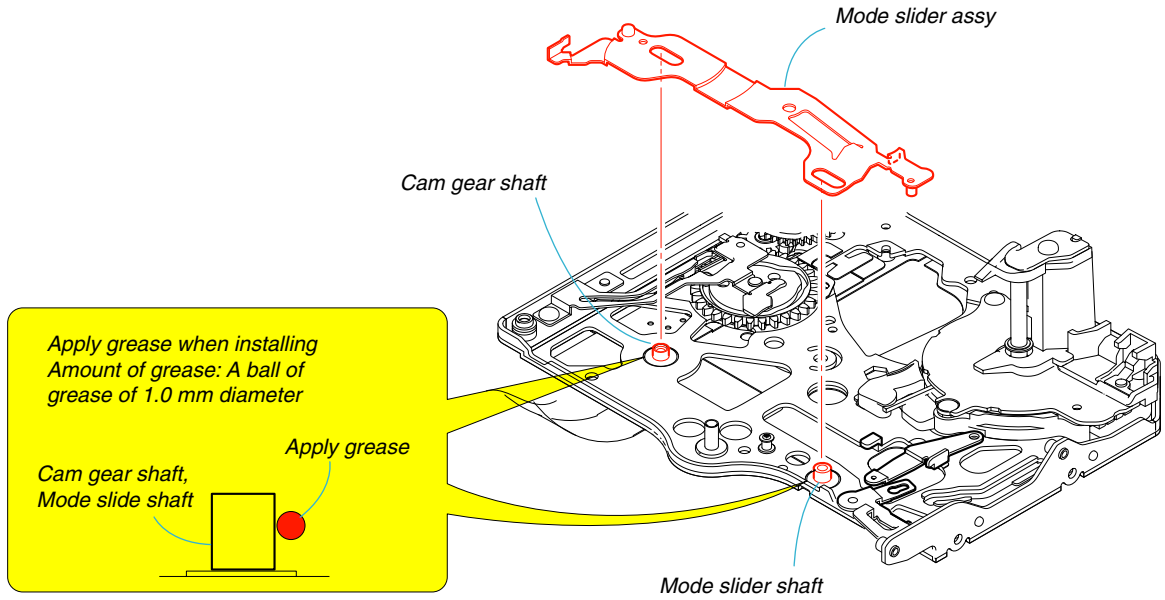
Apply grease (1)

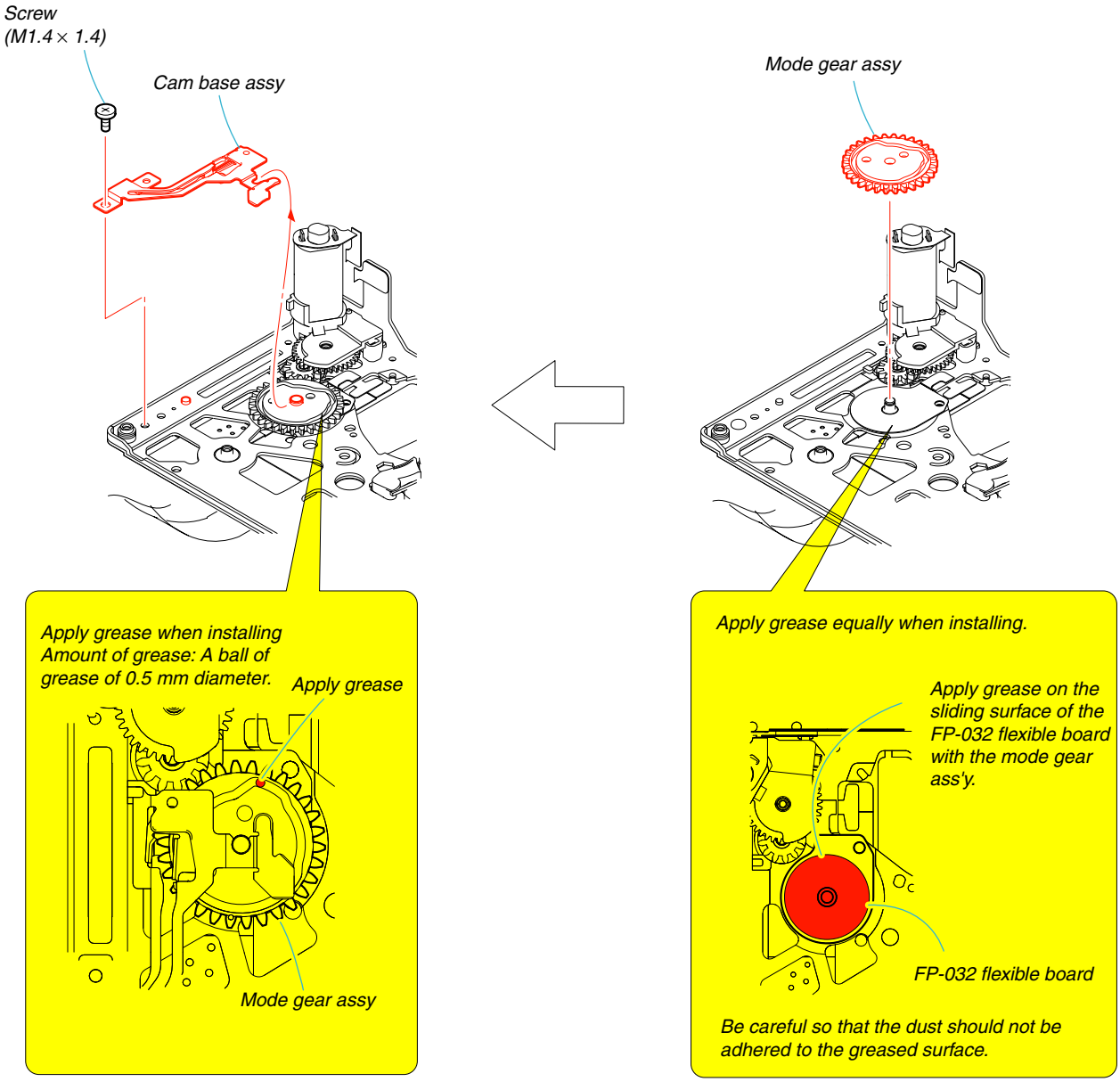

Motor ass'y (loading) (M902)
Motor holder (bottom)
Motor holder
Side of motor worm
Amount of grease application : Grease of a ball of 1.0 mm diameter (2 locations)
Screw (M1.2 × 1.5)
Worm shaft (2J)
Motor holder base
Washer
Relay gear
Conversion gear
Belt
Relay gear shaft
Conversion gear shaft
Apply grease when installing Amount of grease: A ball of grease of 1.0 mm diameter
Apply grease
Conversion gear shaft
Screw (M1.4 × 1.4)
Cam gear ass'y
Apply grease when installing Amount of grease: A ball of grease of 1.0 mm diameter
Side of outside
Cam gear ass'y
Side of inside
Do not apply grease to the locations other than those specified . Make sure to follow the amount of grease to be applied.

Apply grease (2)

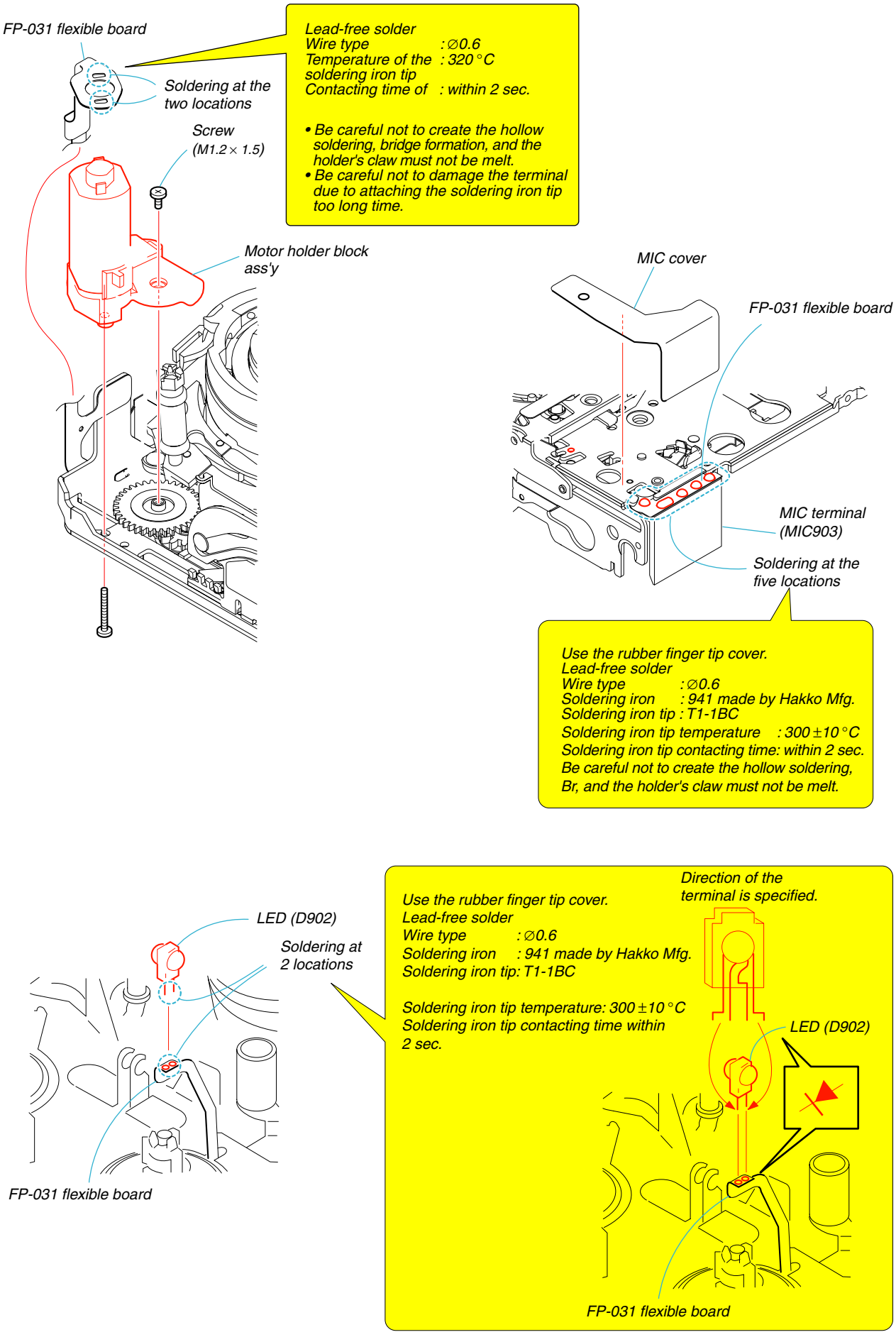

Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter
Shaft in the screw hole
LS chassis block
Apply grease
LS chassis block ass'y
Apply the grease when installing
Amount of grease: A ball of grease of 1.0 mm diameter
Mechanical chassis block ass'y
Cam base assy
On the side inside of press arm
Apply grease
Shaft in the screw hole
Cam gear assy
Shaft
Apply grease
Apply grease
GL rack shaft
Apply grease on the sliding surface of the GL rack shaft and the GL rack groove.

Apply grease (3)

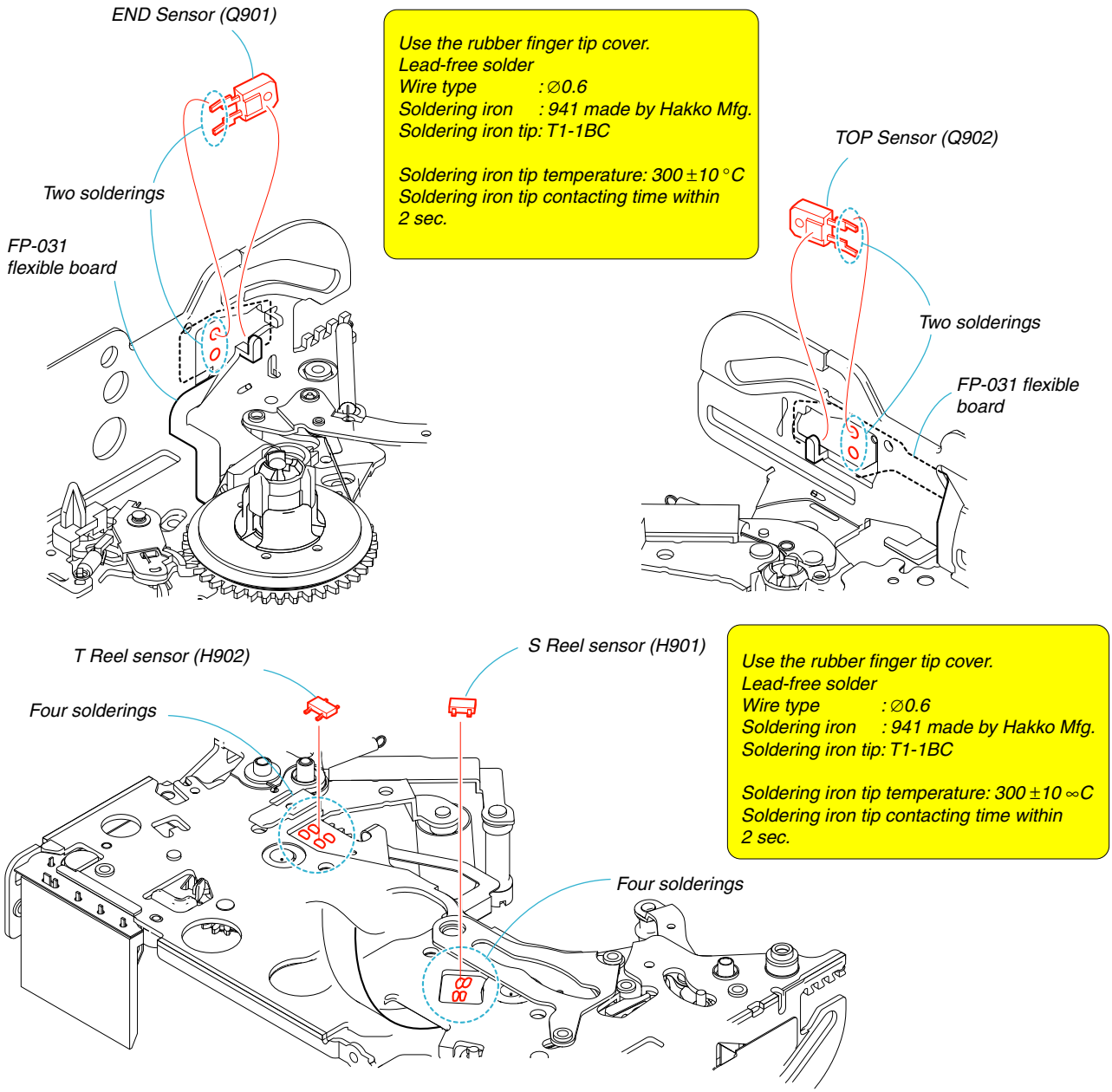




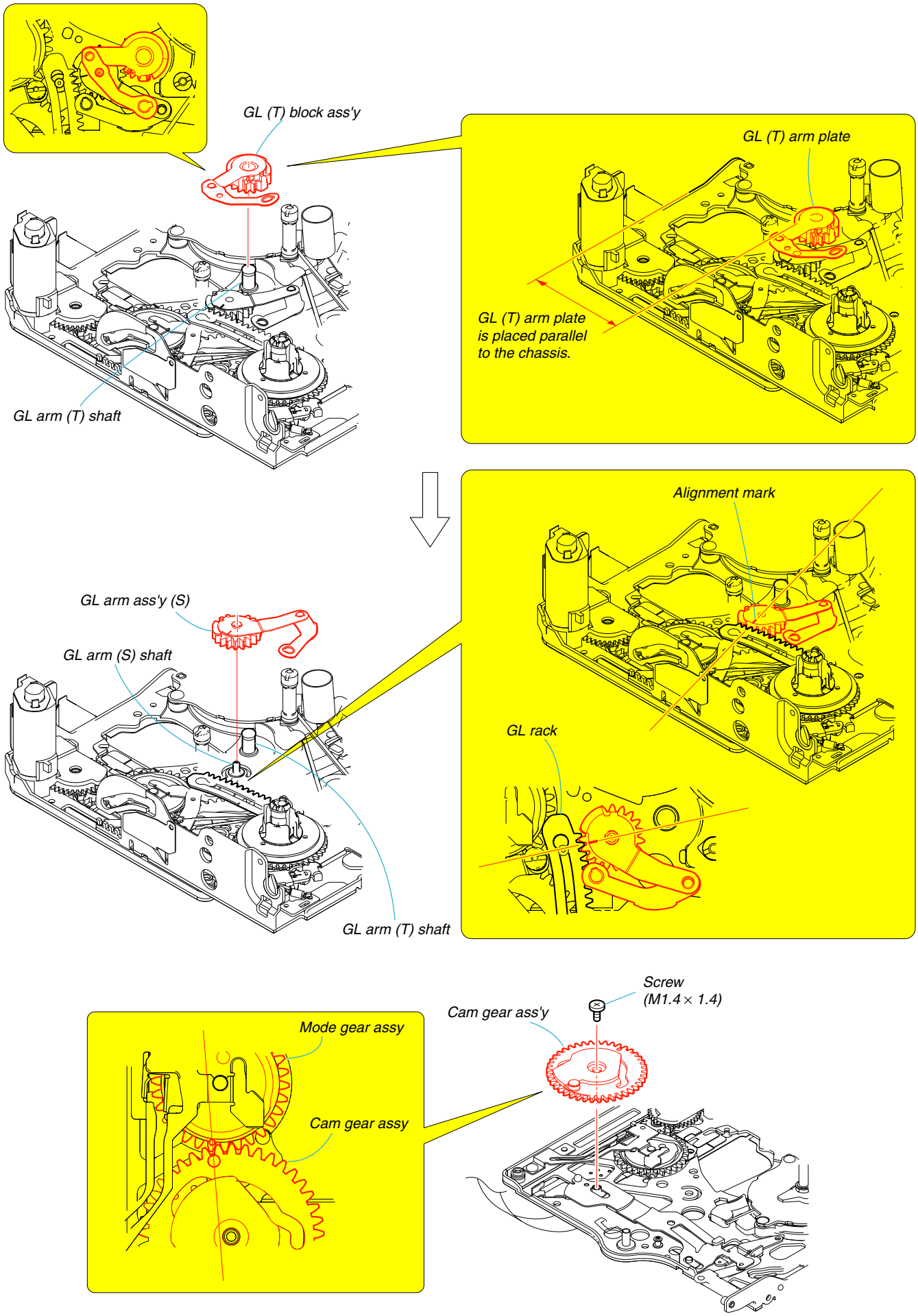
Soldering (1)


FP-031 flexible board
Soldering at the two locations
Screw (M1.2 × 1.5)
Motor holder block ass'y
Lead-free solder
Wire type : ∅0.6
Temperature of the soldering iron tip : 320 °C
Contacting time of : within 2 sec.
• Be careful not to create the hollow soldering, bridge formation, and the holder's claw must not be melt.
• Be careful not to damage the terminal due to attaching the soldering iron tip too long time.
MIC cover
FP-031 flexible board
MIC terminal (MIC903)
Soldering at the five locations
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering, Br, and the holder's claw must not be melt.
LED (D902)
Soldering at 2 locations
FP-031 flexible board
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC
Soldering iron tip temperature: 300 ±10 °C
Soldering iron tip contacting time within 2 sec.
Direction of the terminal is specified.
LED (D902)
FP-031 flexible board

Soldering (2)


END Sensor (Q901)
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC
Soldering iron tip temperature: 300 ±10 °C
Soldering iron tip contacting time within 2 sec.
Two solderings
FP-031 flexible board
TOP Sensor (Q902)
Two solderings
FP-031 flexible board
T Reel sensor (H902)
S Reel sensor (H901)
Four solderings
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip: T1-1BC
Soldering iron tip temperature: 300 ±10 ∞C
Soldering iron tip contacting time within 2 sec.
Four solderings
FP-228 Flexible Board (DEW SENSOR)
Use the rubber finger tip cover.
Lead-free solder
Wire type : ∅0.6
Soldering iron : 941 made by Hakko Mfg.
Soldering iron tip : T1-1BC
Soldering iron tip temperature : 300 ±10 °C
Soldering iron tip contacting time: within 2 sec.
Be careful not to create the hollow soldering, bridge formation, and the holder's claw must not be melt.
FP-031 Flexible Board
Mechanical chassis
Soldering
Soldering at the two locations
FP-228 Flexible Board
FP-031 Flexible Board

Matching Phase



4. Adjustment

4-1. FWD Position Adjustment

Perform this adjustment after the tension regulator ass'y and the S-reel table ass'y are replaced or removed.

- TG1 FWD position adjustment
- FWD back tension adjustment (Refer to Page 6-93).

1) Enter the R/P mode and confirm the positions of TG1 guide and the TG2 guide.
   - Confirm that the distance between the flanges on the TG1 guide and the TG2 guide is 2 mm by inserting the block gauge or the pin gauge between them to measure. If the distance is not 2 mm, perform the following adjustment.

2) Loosen the screw and adjust the band adjuster so that the distance between the flanges on the TG1 guide and the TG2 guide becomes 2 mm using the adjustment screwdriver (Ref. No. J-25), and finally tighten the screw.
   Tightening torque: 0.06 ± 0.01 N•m (0.61 ± 0.1 kgf•cm)
   Note: When measuring the distance between guides by inserting the block gauge or pin gauge, be very careful not to damage the roller.

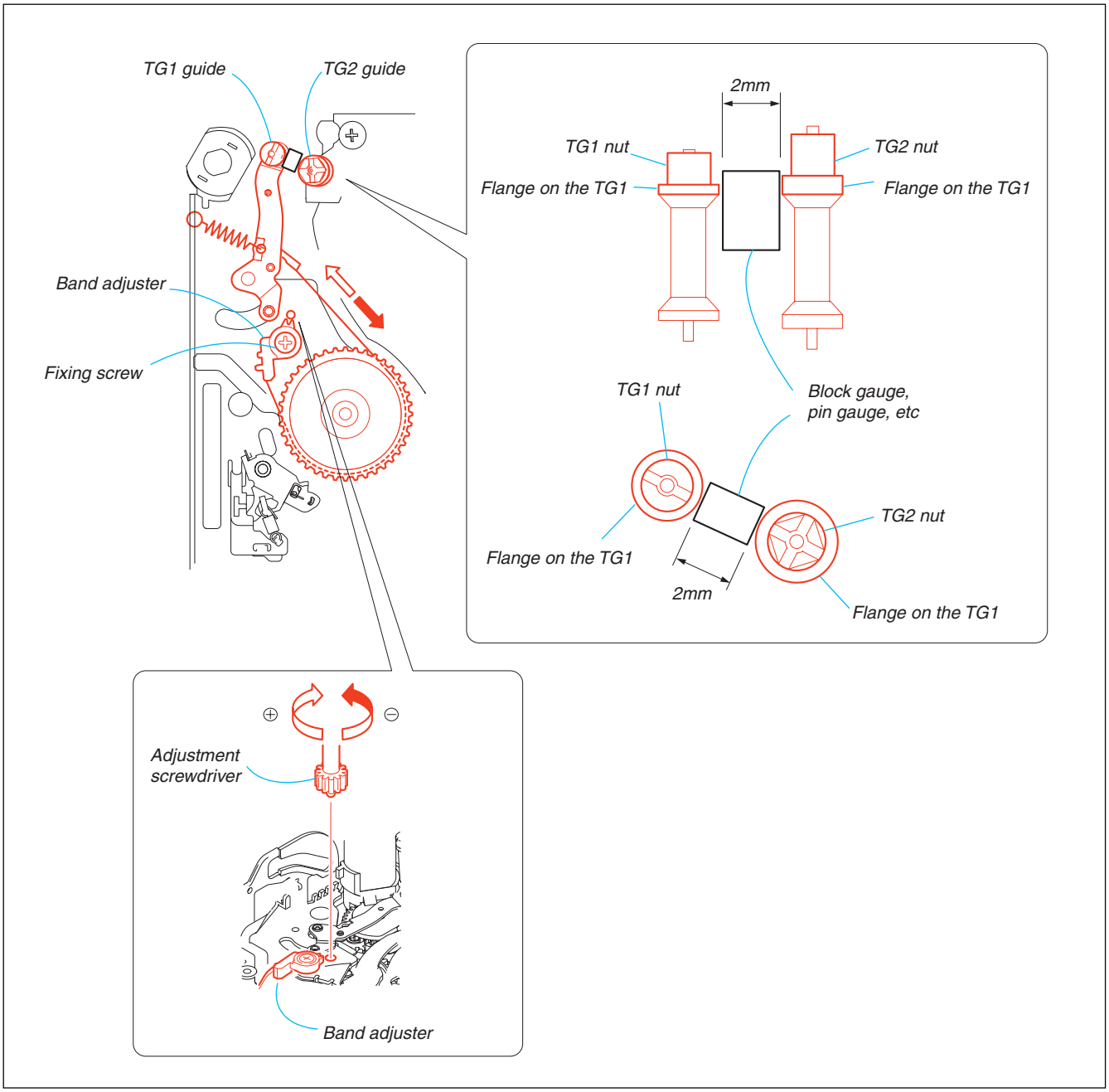


Fig. 6-2-4

4-2. LS Cam Adjustment

The LS Cam Adjustment becomes necessary in the following two cases;
①When the screw fixing the LS cam plate is loosened, and ② when the docking between the LS chassis block and the mechanism chassis block is removed.

Adjustment procedure

1) Enter the R/P mode.
2) Loosen the LS cam plate fixing screws (special head screw M1.4 × 1.4) Ⓐ and Ⓑ by 90 degrees.
3) Pressing the center of the LS chassis block with the force of 15.0 ± 2.0N•m (153.0 ± 25.0kgf•cm) (as shown by the large arrow mark).
4) While pressing the center of the LS chassis block, and while pulling the LS cam plate fixing screw Ⓐ (special head screw M1.4 × 1.4) with the force of 2.5 ± 0.5 N•m (25.5 ± 2.5kgf•cm) (as shown by the small arrow mark), tighten the LS cam plate fixing screw Ⓐ (special head screw M1.4 × 1.4).
   Tightening torque: 0.1 ± 0.01 N•m (1.02 ± 0.1 kgf•cm)
5) Remove the pressing force shown by the large arrow mark in step 3) first. Then remove the pressing force shown by the small arrow mark in step 4), next.
6) Tighten the cam plate fixing screw (special head screw M1.4 × 1.4) Ⓑ.
   Tightening torque: 0.1 ± 0.01 N•m (1.02 ± 0.1 kgf•cm)

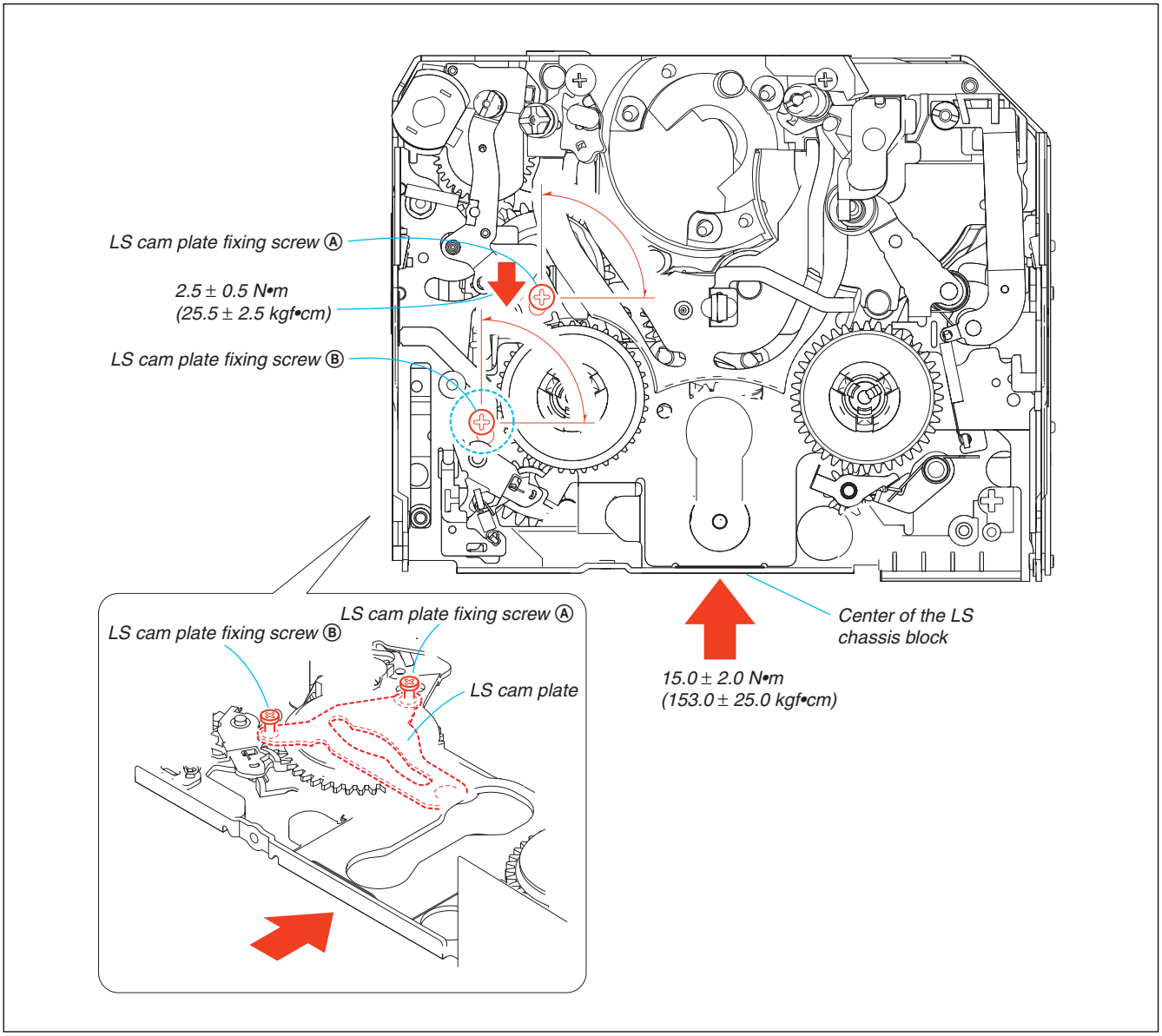
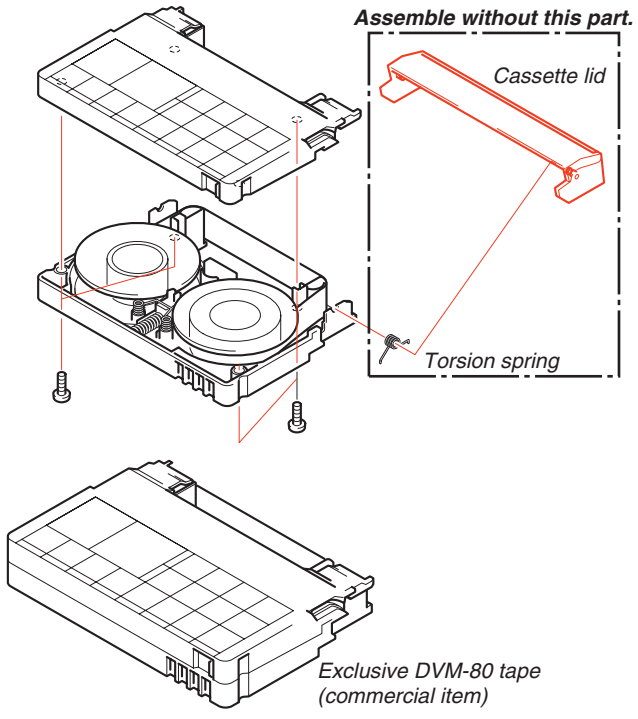

LS cam plate fixing screw Ⓐ
2.5 ± 0.5 N•m
(25.5 ± 2.5 kgf•cm)
LS cam plate fixing screw Ⓑ
Center of the LS chassis block
15.0 ± 2.0 N•m
(153.0 ± 25.0 kgf•cm)
LS cam plate fixing screw Ⓐ
LS cam plate fixing screw Ⓑ
LS cam plate

Fig. 6-2-5

4-3. Tape Path Adjustment

3-1. Adjustment Preparation

1) Clean the tape running surface (tape guides, drum, capstan, pinch roller) referring to Section "2-2. Tape Path System Cleaning".
2) Connect the adjustment remote commander (Ref. No. J-1, J-2) to the LANC terminal of the machine. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
3) Connect an oscilloscope to VC-543 board CN1004 via the CPC-13 jig (J-6082-443-A).
   Channel 1: CPC-13 jig, test pin ② (Note 1, 2)
   External trigger: CPC-13 jig, test pin ④
   Note 1: Connect a 75 Ω resistor between test pins ② of CPC-13 jig and ① (GND).
   75 Ω resistor (Parts code: 1-247-804-11)
   Note 2: Pin numbers of CN1004 are different from test pin number of CPC-13 jig. (See page 6-97)
4) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
5) Select page: 0, address: 10 and set data: 00.
6) Select page: 3, address: 26 and set data: 31, and press the PAUSE (Write) button.
7) Select page: 3, address: 33 and set data: 08.
8) Confirm that the RF waveform on the scope is flat at both of the entrance side and the exit side. (Refer to Fig. 6-2-7A.)
   If the RF waveform is not flat either at the entrance side or the exit side (refer to Fig. 6-2-7 B and C), perform the adjustment of section "3-2. TG2/TG4 Guide Coarse Adjustment" and later.
9) Prepare an exclusive DVM-80 tape (commercial item).
   (Remove the lid of the cassette.)



10) When the required conditions of step 8) are satisfied, perform [Required Work upon Completion of Adjustment] as described below upon completion of adjustment/check.

[Required Work upon Completion of Adjustment]

1) Connect the adjustment remote commander (Ref. No. J-1, J-2) to the LANC terminal of the machine. Set the HOLD switch to ON. (Set the slide switch to SERVICE)
2) Select page: 0, address: 10 and set data: 00.
3) Select page: 3, address: 26 and set data: 00, and press the PAUSE (Write) button.
4) Select page: 3, address: 33 and set data: 00.

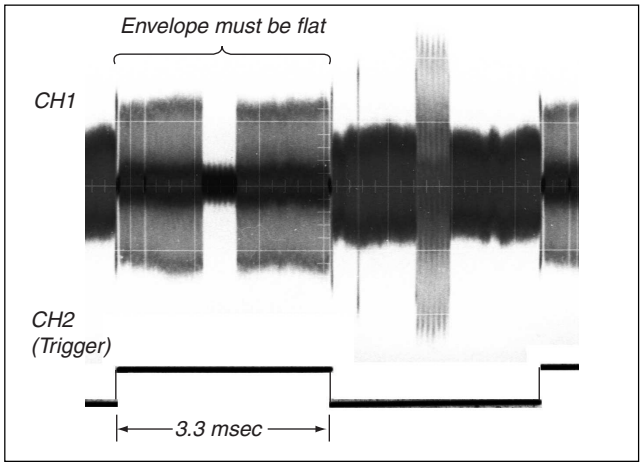


Fig. 6-2-6

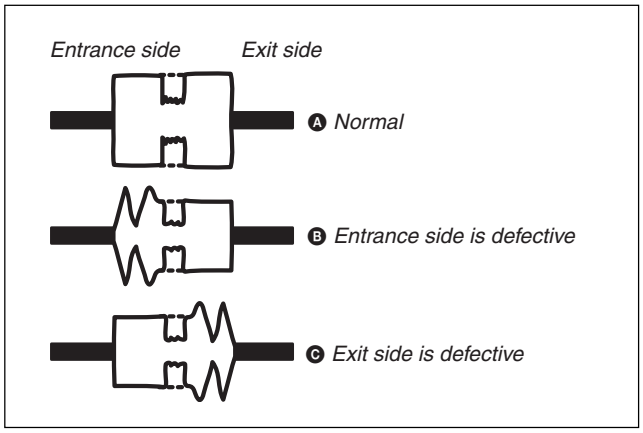


Fig. 6-2-7

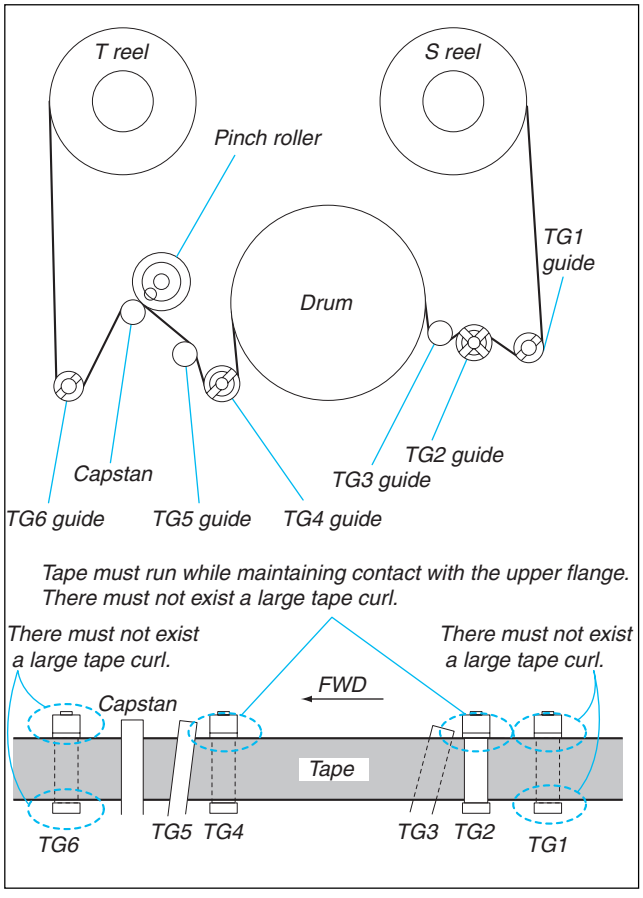


Fig. 6-2-8

3-2. TG2/TG4 Guide Coarse Adjustment

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Adjust the TG2 and TG4 guides until the RF envelope waveform becomes flat. (Refer to Fig. 6-2-11.)

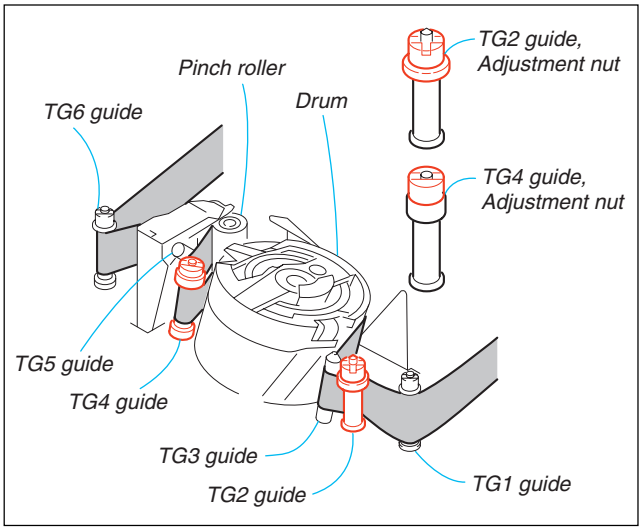


Fig. 6-2-9

3-3. FWD Back Tension Adjustment

1) Set the mini DV torque cassette (Ref. No. J-24) and establish the FWD mode.
2) Confirm that the S side torque cassette reading value is in the range as shown below.
   0.29 to 0.39 mN•m (3.0 to 4.0 gf•cm)
   If the measurement value does not satisfy the specifications, perform the following adjustment.
   - If the measurement value is higher than the specification: (Decreases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓑ.
   - If the measurement value is lower than the specification: (Increases the spring tension)
     Move the tension coil spring hook to another spring stay in the direction of Ⓐ.

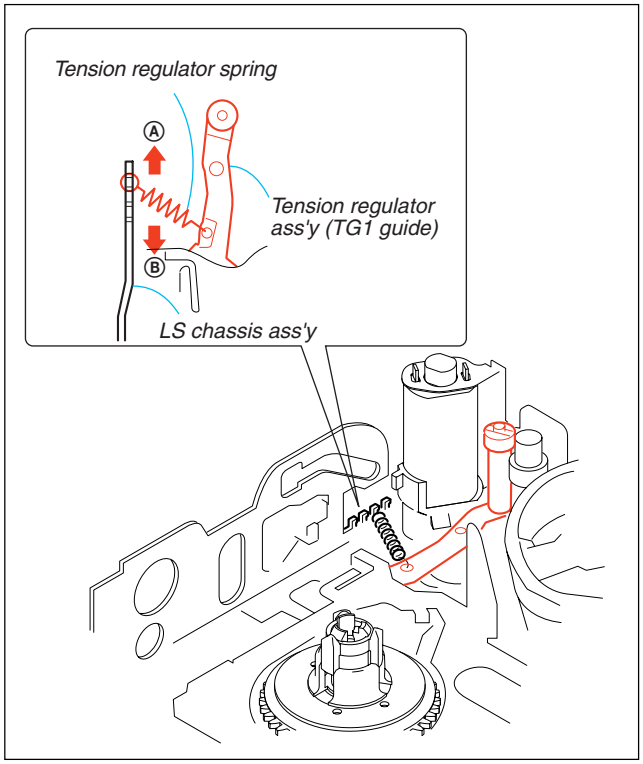


Fig. 6-2-10

3-4. TG2/TG4 Guide Fine Adjustment

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Adjust the TG2 so that the RF envelope has the larger amplitude at the entrance side first, than adjust TG2 guide for flat amplitude. (Refer to Fig. 6-2-11.)
3) Adjust the TG4 so that the RF envelope has the larger amplitude at the exit side first, than adjust TG4 guide for flat amplitude. (Refer to Fig. 6-2-12.)

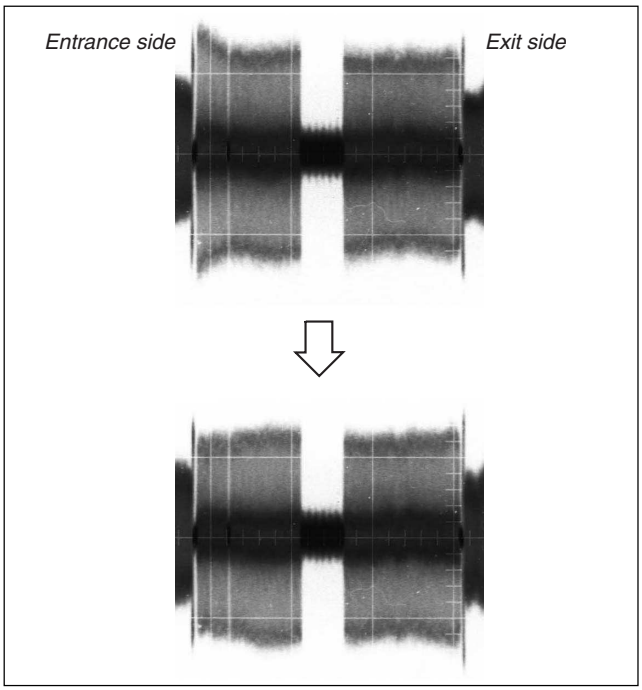


Fig. 6-2-11

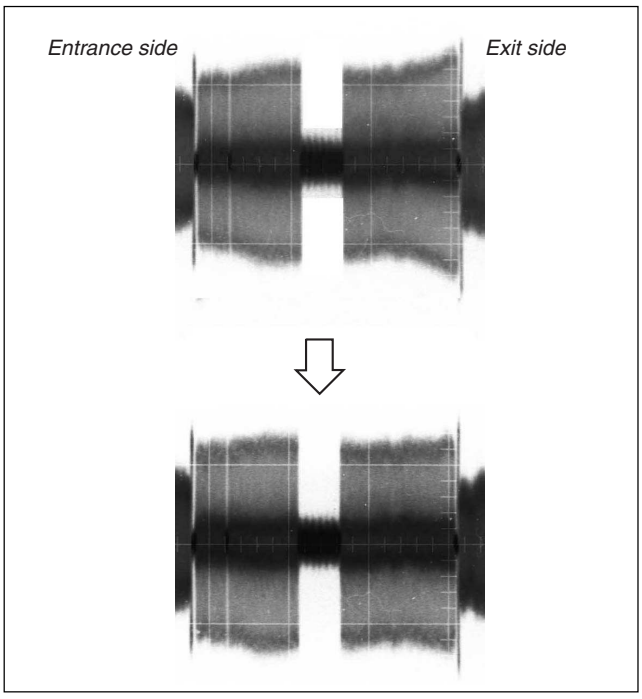


Fig. 6-2-12

3-5. TG1 Height Adjustment

1) Replay the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Confirm that the waveform of the tape path is flat. (Refer to Fig. 6-2-11, and 6-2-12.)
3) Confirm to see that there are gaps between top edge of the tape and the TG1 flange, and bottom edge and the TG1 flange. (Refer to Fig. 6-2-13.)
   If the top and/or the bottom edge of the tape contacts with TG1 flange, adjust the height of the TG1 so that there is gap between the edge of the tape and the flange.
   If the height of the TG1 is adjusted, check the entrance side of the tape path waveform (refer to Fig. 6-2-11, and 6-2-12). If there is any change in the entrance side of the tape path waveform, re-adjust the entrance side (TG2). (Refer to "3-4. TG2/TG4 Guide Fine Adjustment.)

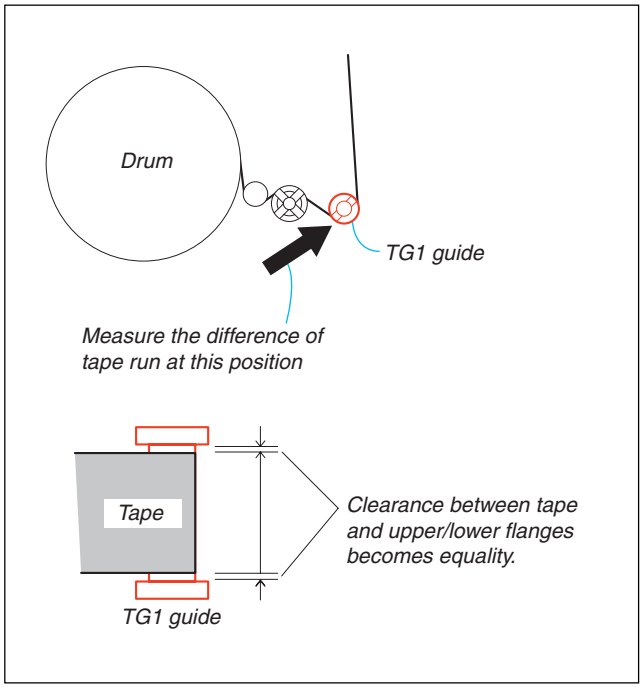


Fig. 6-2-13

3-6. TG6 Height Adjustment

Note: Perform "TG6 height adjustment" using the end segment of the tape which is within the last 5 minutes from the end of the thin DVM-80 tape (commercial item).
When using the DVM-80 (commercial item), use the modified one by removing the cassette rid (Refer to Page 6-92. Adjustment Preparation 9)).

1) Play back the tape (DVM-80) (commercial item).
2) Press the FF button to enter the CUE mode and measure the tape height after 5 seconds have elapsed. (Fig. 6-2-14)
3) Release your finger from the FF button and press the REW button to enter the REV mode.
   Measure the tape height after 3 seconds have elapsed.
4) Release your finger from the REW button.
5) Adjust the TG6 height so that the tape height in the CUE mode is the same as that in the REV mode.
   Adjust the TG6 height by rotating the adjustment nut of the TG6 guide in the following manner.
   - Tape height in the REV mode is higher ⟶ Rotate the adjustment nut clockwise
   - Tape height in the REV mode is lower ⟶ Rotate the adjustment nut counter-clockwise

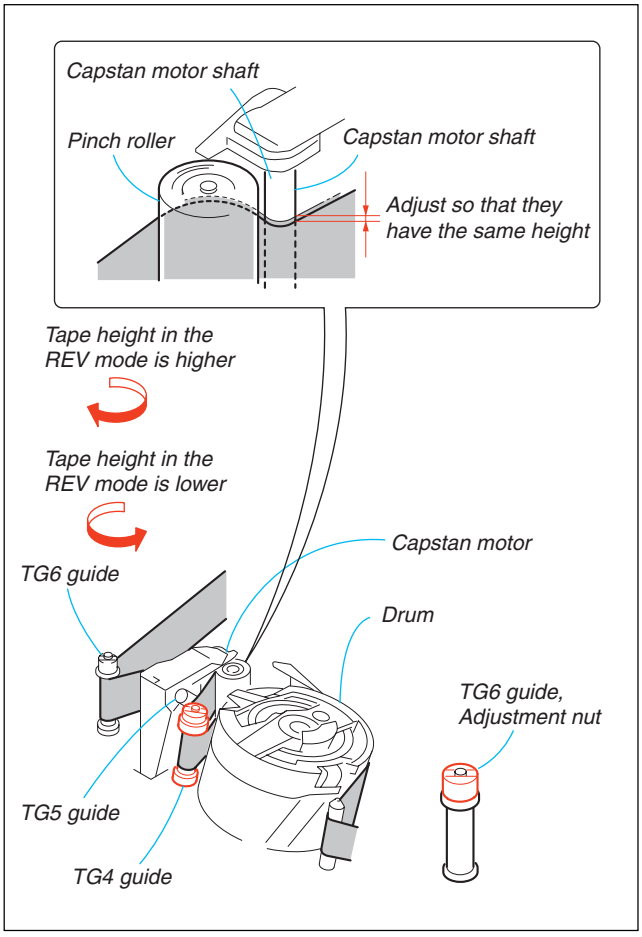


Fig. 6-2-14

6) Repeat the steps from 2 to 5 until the tape height in the CUE mode and REV mode becomes the same.

3-7. Tape Run Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12). Establish the CUE mode first then the REV mode. Confirm in the respective modes that there are no large tape curls at the upper flange of TG2 and TG4. Then confirm in the respective modes that there are no large tape curls at the upper and lower flanges of TG1 and TG6.

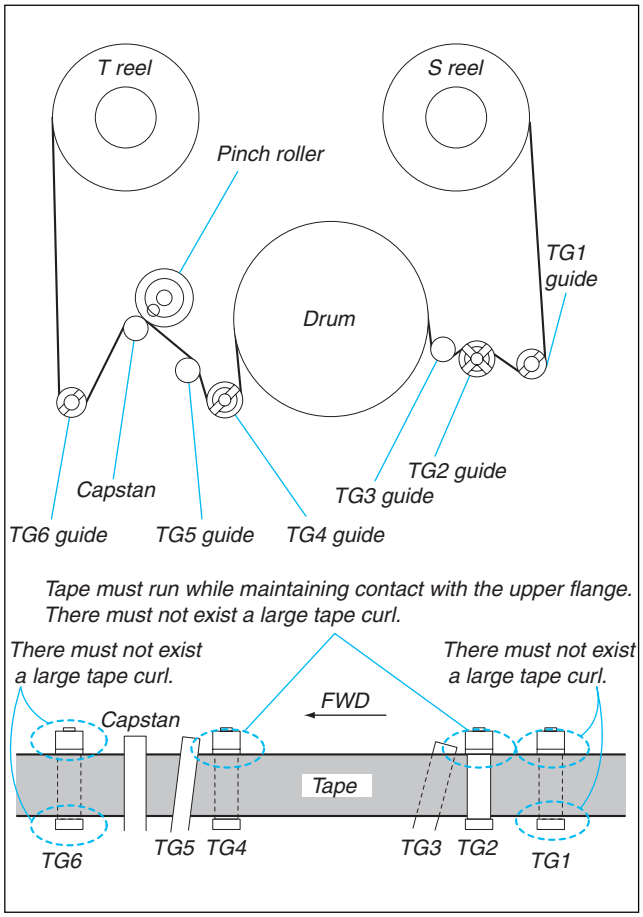


Fig. 6-2-15

3-8. Check upon Completion of Adjustment

1. Tracking Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Establish the CUE (or REV) mode. Take the amplitude (A) in this mode as the 100% waveform amplitude. (Refer to Fig. 6-2-16.)
3) Establish the FWD mode. Confirm that the difference between the minimum (E min) and the maximum (E max) is less than 30%. (When taking the amplitude (A) in the CUE or REV mode as 100%)

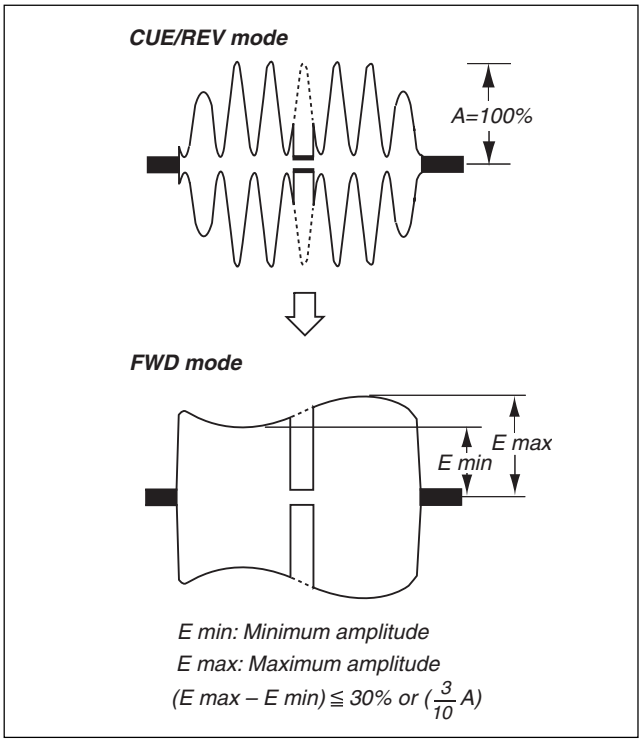


Fig. 6-2-16

4) Confirm that the RF waveform does not have excessive fluctuation of amplitude. (Fluctuation of amplitude should be 10% or less at both entrance side (B) and exit side (C), when taking the amplitude (A) in the CUE or REV mode as 100%)

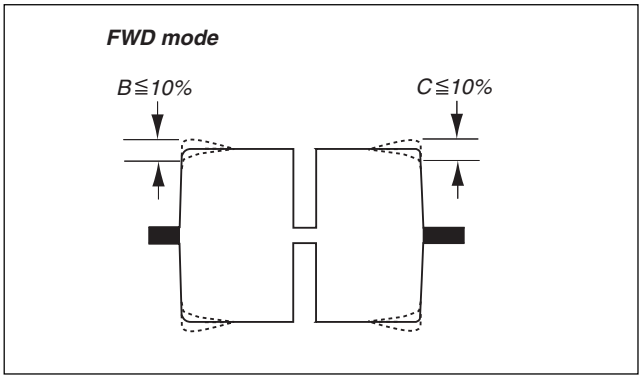


Fig. 6-2-17

2. CUE/REV Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Establish the CUE mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively, when taking the amplitude (A) in the CUE or REV mode as 100%.
3) Establish the REV mode. Confirm that the pitches between the peaks of the RF waveform are equally spaced. Also confirm that the RF waveform amplitude at entrance side (B) and exit side (C) is 50% or more respectively.

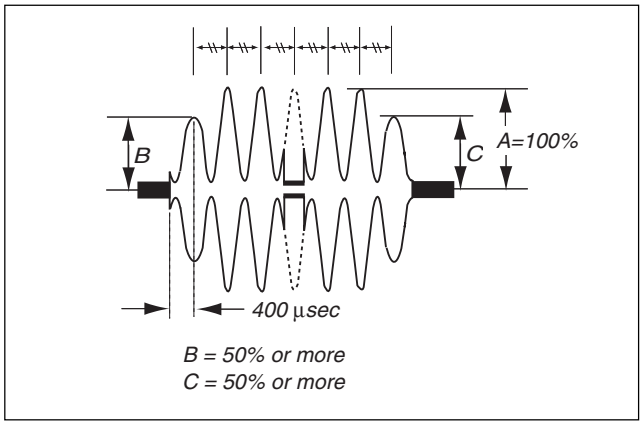


Fig. 6-2-18

3. Rise-up Check

1) Play back the tracking standard (XH2-1A1) (Ref. No. J-12).
2) Change the modes from CUE mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from CUE mode to FWD.
3) Change the modes from REV mode (two seconds or more of REV and to the FWD within five seconds) to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from REV mode to FWD.
4) Change the modes from STOP mode to FWD. Confirm that the RF waveform rises up within two seconds when the mode is changed from STOP mode to FWD.

6-3. VIDEO SECTION ADJUSTMENTS

3-1. PREPARATIONS BEFORE ADJUSTMENTS

3-1-1. Precautions on Adjusting

Note: Before performing the adjustment, check the data of page: 0, address: 10 is "00". If not, select page: 0, address: 00, and set data "00".

1) The adjustments of this unit are performed in the VTR mode (VCR mode) or camera mode (CAMERA mode).

3-1-2. Adjusting Connectors

The measuring point of the playback RF signal is CN1004 of VC-543 board. Connect the measuring instruments via the CPC-13 jig (J-6082-443-A). Refer to "MECHANISM SECTION ADJUSTMENT" for the measuring method. The following table lists the test pin numbers of CPC-13 jig, and the pin numbers and signal names of CN1004.

Pin No.	Signal Name	Pin No.	Signal Name
1 (20)	REG_GND	11 (10)	EEP_SO_C
2 (19)	RF_MON	12 (9)	EEP_SO_S
3 (18)	REG_GND	13 (8)	EEP_SCK_C
4 (17)	SWP	14 (7)	EEP_SCK_S
5 (16)	FRRV	15 (6)	D_2.8V
6 (15)	REG_GND	16 (5)	MD2_C
7 (14)	GND	17 (4)	MD2
8 (13)	GND	18 (3)	XCS_MC_FLASH_C
9 (12)	EEP_SI_C	19 (2)	XCS_MC_FLASH
10 (11)	EEP_SI_S	20 (1)	XSYS_RST

Note: The pin number in ( ) is test terminal number of CN1004 on the VC-543 board.

Table 6-3-1

3-1-3. Connecting the Equipment

Connect the measuring instruments as shown in Fig. 6-3-1, and perform the adjustments.

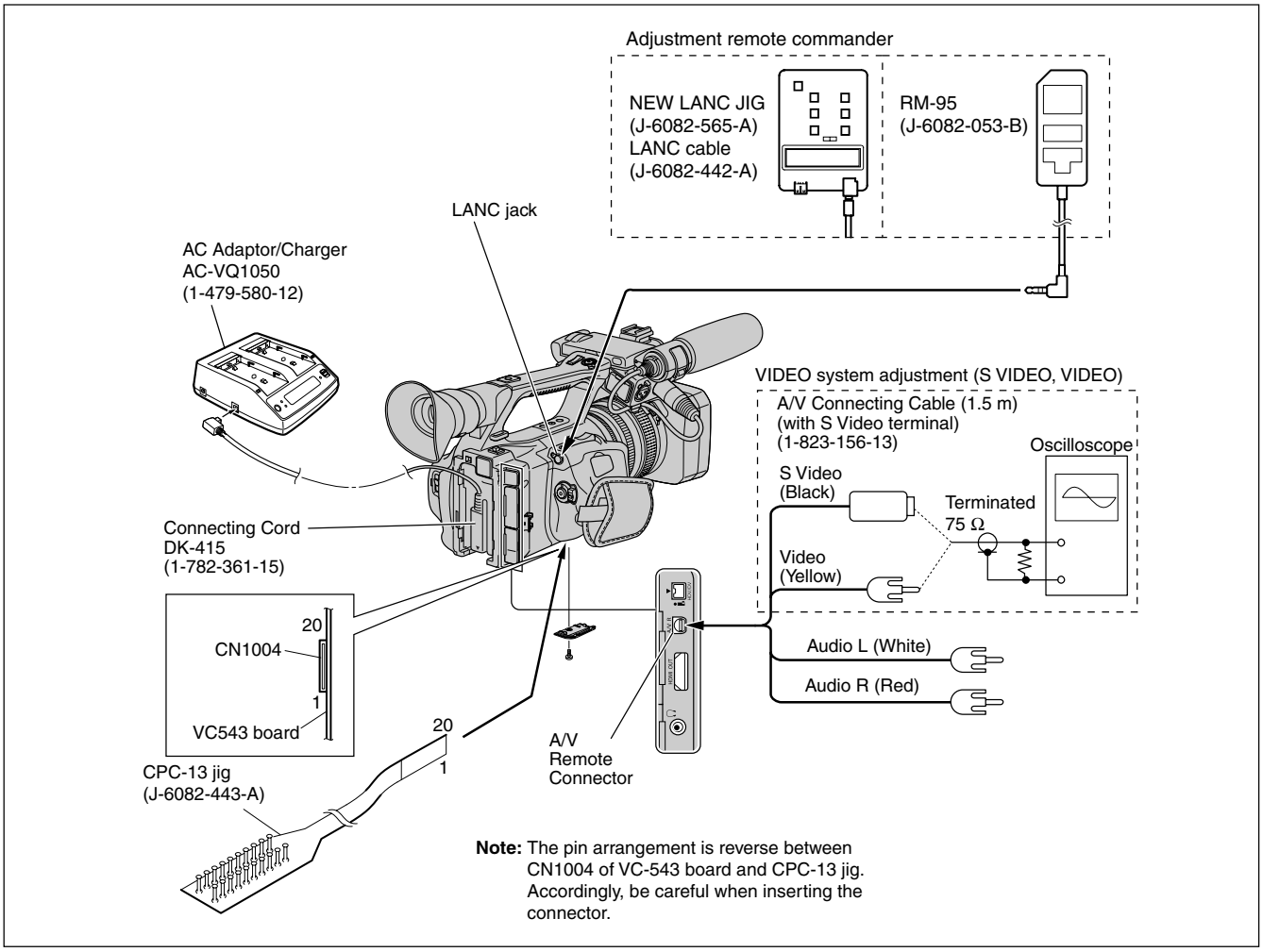


Fig. 6-3-1

3-1-4. Alignment Tapes

Use the alignment tapes shown in the following table.
Use tapes specified in the signal column of each adjustment.

Name	Use
Tracking tape (XH2-1A1)	Tape path adjustment
SW/OL standard (XH2-3)	Switching position adjustment
Audio operation check (XH5-3(NTSC), XH5-3P(PAL))	Audio system adjustment
System operation check (XH5-5(NTSC), XH5-5P(PAL))	Operation check

Fig. 6-3-2 shows the 75% color bar signals recorded on the alignment tape for Audio Operation Check.

Note: Measure with video terminal (Terminated at 75 Ω)

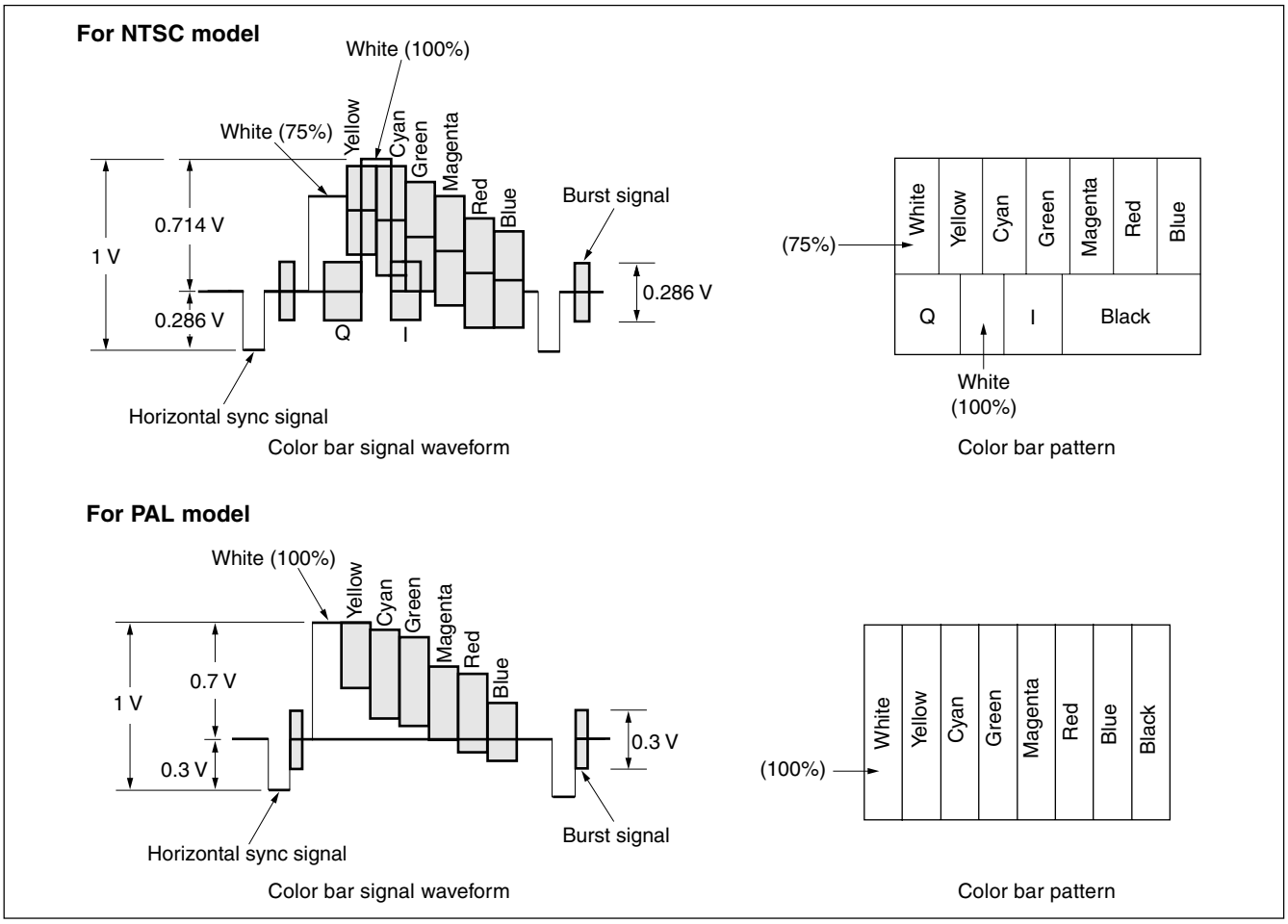


Fig. 6-3-2 Color bar signal of alignment tapes

3-1-5. Output Level and Impedance

A/V Remote Connector

10-pin connector

When A/V connecting cable is connected

Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.286 Vp-p (burst signal), 75 Ω (ohms) (NTSC)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms) (PAL)

When Component A/V connecting cable is connected

Y: 1 Vp-p, 75 Ω (ohms), P_B/P_R, C_B/C_R: +/–350mV, 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Initialization of EEPROM Data

If the EEPROM data is erased due to some reason, perform "1-2. INITIALIZATION OF EVR DATA ", of "6-1. CAMERA SECTION ADJUSTMENTS"

2. Node Unique ID No. Input

Note 1: Perform "2-2. Input of Serial No." if the data on page 13 has been cleared and original node unique ID No. is uncertain.
Usually, read the data on page 13 before repair, and write it after repair.

Note 2: If reading/writing data on pages 13, set data: 01 to page: 0, address: 10, and then select pages: 3. By this data setting, the pages 13 can be selected.
After the data reading/writing finished, return the data on page: 0, address: 10 to "00".

2-1. Input of Company ID

Write the company ID to the EEPROM (nonvolatile memory).

Page	13
Address	04, 05, 06, 07

Input method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 71, and set data: 01, then press the PAUSE (Write) button.
3) Select page: 0, address: 10, and set data: 01.
4) Select page: 3 (13), and enter the following data.

Note 3: Each time the data is set, press the PAUSE (Write) button on the adjusting remote commander.

Address	Data
04	08
05	00
06	46
07	01

5)Select page: 0, address: 10, and set data: 00.

6) Select page: 3, address: 70, and set data: 10, then press the PAUSE (Write) button.
7) Select page: 3, address: 70, and check that the data changes to "11".
8) Select page: 0, address: 01, and set data: 00.

2-2. Input of Serial No.

Write the serial No. and model code to the EEPROM (nonvolatile memory).
In writing the serial No., a decimal number should be converted into a hexadecimal number

Page	13
Address	08, 09, 0A, 0B

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 71, and set data: 01, then press the PAUSE (Write) button.
3) Read the serial No. from the model name label, and it is assumed to be D_1.
   Example: If serial No. is "77881",
   $D_1 = 77881$
4) From Table 6-3-2, obtain D_2 and H_1 that correspond to D_1.
   Example: If $D_1 = 77881$,
   $D_2 = D_1 - 65536 = 12345$
   $H_1 = FE$

D_1 (decimal)	D_2 (decimal)	H_1 (hexadecimal) (Service model code)
00001 to 65535	D_1	FE
65536 to 131071	$D_1 - 65536$	FE
131072 to196607	$D_1 - 131072$	FE
196608 to 262143	$D_1 - 196608$	FE
262144 to 327679	$D_1 - 262144$	FE
327680 to 393215	$D_1 - 327680$	FE
393216 to 458751	$D_1 - 393216$	FE
458752 to 524287	$D_1 - 458752$	FE
524288 to 589823	$D_1 - 524288$	FE
589824 to 655359	$D_1 - 589824$	FE
655360 to 720895	$D_1 - 655360$	FE
720896 to 786431	$D_1 - 720896$	FE
786432 to 851967	$D_1 - 786432$	FE
851968 to 917503	$D_1 - 851968$	FE
917504 to 983039	$D_1 - 917504$	FE
983040 to 999999	$D_1 - 983040$	FE

Table 6-3-2

5) Enter H_1 to address: 09 on page: 13.
   Example: If $H_1 = FE$,
   Select page: 0, address: 10, and set data: 01.
   Select page: 3 (13), address: 09, and set data: FE, then press the PAUSE (Write) button.
6) From Table 6-3-3, obtain the maximum decimal number less than D_2, and it is assumed to be D_3.
   Example: If $D_2 = 12345$.
   $D_3 = 12288$
7) From Table 6-3-3, obtain a hexadecimal number that corresponds to D_3, and it is assumed to be H_3.
   Example: If $D_3 = 12288$,
   $H_3 = 3000$
8) Calculate D_4 using following equations (decimal calculation). ($0 \leqq D_4 \leqq 225$)
   $D_4 = D_2 - D_3$
   Example: If $D_2 = 12345$ and $D_3 = 12288$,
   $D_4 = 12345 - 12288 = 57$
9) Convert D_4 into a hexadecimal number to obtain H_4. (See Table 6-4-1 "Hexadecimal - decimal conversion table" in 6-4. Service Mode)
   Example: If $D_4 = 57$,
   $H_4 = 39$
10) Enter higher two digits of H_3 to address: 0A on page: 13.
    Example: If $H_3 = 3000$,
    Select page: 0, address: 10, and set data: 01.
    Select page: 3 (13), address: 0A, and set data: 30, then press the PAUSE (Write) button.
11) Enter H_4 to address: 0B on page: 13.
    Example: If $H_4 = 39$,
    Select page: 0, address: 10, and set data: 01.
    Select page: 3 (13), address: 0B, and set data: 39, then press the PAUSE (Write) button.
12) Select page: 0, address: 10, and set data: 00.
13) Select page: 3, address: 70, and set data: 10, then press the PAUSE (Write) button.
14) Select page: 3, address: 70, and check that the data changes to "11".
15) Select page: 0, address: 01, and set data: 00.

D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3	D_3	H_3
0	0000	8192	2000	16384	4000	24576	6000	32768	8000	40960	A000	49152	C000	57344	E000
256	0100	8448	2100	16640	4100	24832	6100	33024	8100	41216	A100	49408	C100	57600	E100
512	0200	8704	2200	16896	4200	25088	6200	33280	8200	41472	A200	49664	C200	57856	E200
768	0300	8960	2300	17152	4300	25344	6300	33536	8300	41728	A300	49920	C300	58112	E300
1024	0400	9216	2400	17408	4400	25600	6400	33792	8400	41984	A400	50176	C400	58368	E400
1280	0500	9472	2500	17664	4500	25856	6500	34048	8500	42240	A500	50432	C500	58624	E500
1536	0600	9728	2600	17920	4600	26112	6600	34304	8600	42496	A600	50688	C600	58880	E600
1792	0700	9984	2700	18176	4700	26368	6700	34560	8700	42752	A700	50944	C700	59136	E700
2048	0800	10240	2800	18432	4800	26624	6800	34816	8800	43008	A800	51200	C800	59392	E800
2304	0900	10496	2900	18688	4900	26880	6900	35072	8900	43264	A900	51456	C900	59648	E900
2560	0A00	10752	2A00	18944	4A00	27136	6A00	35328	8A00	43520	AA00	51712	CA00	59904	EA00
2816	0B00	11008	2B00	19200	4B00	27392	6B00	35584	8B00	43776	AB00	51968	CB00	60160	EB00
3072	0C00	11264	2C00	19456	4C00	27648	6C00	35840	8C00	44032	AC00	52224	CC00	60416	EC00
3328	0D00	11520	2D00	19712	4D00	27904	6D00	36096	8D00	44288	AD00	52480	CD00	60672	ED00
3584	0E00	11776	2E00	19968	4E00	28160	6E00	36352	8E00	44544	AE00	52736	CE00	60928	EE00
3840	0F00	12032	2F00	20224	4F00	28416	6F00	36608	8F00	44800	AF00	52992	CF00	61184	EF00
4096	1000	12288	3000	20480	5000	28672	7000	36864	9000	45056	B000	53248	D000	61440	F000
4352	1100	12544	3100	20736	5100	28928	7100	37120	9100	45312	B100	53504	D100	61696	F100
4608	1200	12800	3200	20992	5200	29184	7200	37376	9200	45568	B200	53760	D200	61952	F200
4864	1300	13056	3300	21248	5300	29440	7300	37632	9300	45824	B300	54016	D300	62208	F300
5120	1400	13312	3400	21504	5400	29696	7400	37888	9400	46080	B400	54272	D400	62464	F400
5376	1500	13568	3500	21760	5500	29952	7500	38144	9500	46336	B500	54528	D500	62720	F500
5632	1600	13824	3600	22016	5600	30208	7600	38400	9600	46592	B600	54784	D600	62976	F600
5888	1700	14080	3700	22272	5700	30464	7700	38656	9700	46848	B700	55040	D700	63232	F700
6144	1800	14336	3800	22528	5800	30720	7800	38912	9800	47104	B800	55296	D800	63488	F800
6400	1900	14592	3900	22784	5900	30976	7900	39168	9900	47360	B900	55552	D900	63744	F900
6656	1A00	14848	3A00	23040	5A00	31232	7A00	39424	9A00	47616	BA00	55808	DA00	64000	FA00
6912	1B00	15104	3B00	23296	5B00	31488	7B00	39680	9B00	47872	BB00	56064	DB00	64256	FB00
7168	1C00	15360	3C00	23552	5C00	31744	7C00	39936	9C00	48128	BC00	56320	DC00	64512	FC00
7424	1D00	15616	3D00	23808	5D00	32000	7D00	40192	9D00	48384	BD00	56576	DD00	64768	FD00
7680	1E00	15872	3E00	24064	5E00	32256	7E00	40448	9E00	48640	BE00	56832	DE00	65024	FE00
7936	1F00	16128	3F00	24320	5F00	32512	7F00	40704	9F00	48896	BF00	57088	DF00	65280	FF00

Note: D_3: Decimal
H_3: Hexadecimal

Table 6-3-3

3-3. SERVO AND RF SYSTEM ADJUSTMENTS

Before perform the servo and RF system adjustments, check that the specified values of "Origin Oscillation check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00". If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:
1. RF adjustment preparation
2. CAP FG duty adjustment
3. Switching position adjustment
4. SD error rate check
5. Processing after adjustments

1. RF Adjustment Preparation

Turn on both of the LCD panel and EVF to check the influence from the flexible cable from EVF to RF signal.
Set the data before "CAP FG duty adjustment", "Switching position adjustment", "SD error rate check".

Data change method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	C4	67	
3	3	C5	01	
4	7	01	BF	
5	7	02	FF	
6	7	00	01	Press PAUSE (Write) button.
7	7	02		Check the data is "01".
8	0	01	00	

2. CAP FG Duty Adjustment (VC-543 board)

RadarW

Set the CAP FG signal duty cycle to 50% to establish an appropriate capstan servo. If deviated, the uneven rotation of capstan and noise can occur.

Mode	VTR stop (VCR mode)
Signal	No signal
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	16
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".
Adjusting method:

Order	Page	Address	Data	Procedure
1				Close the cassette compartment without inserting cassette.
2	0	01	01	
3	3	71	01	Press PAUSE (Write) button.
4	3	03	FF	Press PAUSE (Write) button.
5	C	16	20	Press PAUSE (Write) button.
6	3	01	1B	Press PAUSE (Write) button.
7	3	02		Check the data changes in the following order "1B" → "2B" → "00"
8	3	03		Check the data is "00". (Note 2)
9	3	01	00	Press PAUSE (Write) button.
10	3	70	10	Press PAUSE (Write) button.
11	3	70		Check the data changes to "11".
12	0	01	00	

Note 2: If the data is "01", adjustment has errors or the mechanism deck is defective.
If the data is "80", the mechanism deck is in emergency state or the end of tape was detected.

3. Switching Position Adjustment (VC-543 board)

RadarW

Mode	VTR playback (VCR mode)
Signal	SW/OL standard (XH2-3)
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	10, 11, 12, 13
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Adjusting method:

Order	Page	Address	Data	Procedure
1				Insert the SW/OL standard tape and enter the VTR stop mode.
2	0	01	01	
3	3	71	01	Press PAUSE (Write) button.
4	C	10	EE	Press PAUSE (Write) button.
5	3	03	FF	Press PAUSE (Write) button.
6	3	21		Check the data is "02". (Note 2)
7	3	01	0D	Press PAUSE (Write) button.
8	3	02		Check the data changes to "00".
9	3	03		Check the data is "00". (Note 3)
10	3	01	00	Press PAUSE (Write) button.
11	3	70	10	Press PAUSE (Write) button.
12	3	70		Check the data changes to "11".
13	0	01	00	

Note 2: If the data is "72", the tape top being played. After playing the tape for 1 to 2 seconds, stop it, perform step 5 and higher.
If the data is "62", the tape end being played. After rewind the tape, perform step 5 and higher.

Note 3: If bit0 of the data is "1", the EVEN channel is defective.
If bit1 of the data is "1", the ODD channel is defective.
Contents of the defect is see written into page: C, address: 10 and 12. See following table.
If bit3 of the data is "1", the tape end being played, so rewind the tape and perform the adjustment again.
(For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".)

When the EVEN channel is defective

Data of page: C, address: 10	Contents of defect
EE	Writing into EEPROM (IC3805) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC2601

When the ODD channel is defective

Data of page: C, address: 12	Contents of defect
EE	Writing into EEPROM (IC3805) is defective
E8	Adjustment data is out of range
E7	No data is returned from IC2601

4. SD Error Rate Check (VC-543 board) RadarW

Note: Check that the data of page: 0, address: 10 is "00".

4-1. Preparations before adjustments

Mode	Camera recording (CAMERA mode)
Subject	Arbitrary

Switch setting

1) REC FORMAT (Menu setting) ..... DV

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	0	10	01	
4	C (1C)	0D	CC	Press PAUSE (Write) button.
5	0	10	00	
6	3	1D	20	Press PAUSE (Write) button.
7				Record the camera signal for 2 minutes.

4-2. Error Rate Check

Mode	VTR playback (VCR mode)
Subject	Recorded signal at "Preparations before adjustments"
Measurement Point	Displayed data of page: 3, address: 03
Measuring Instrument	Adjusting remote commander
Adjustment Page	C
Adjustment Address	B2 to C7
Specified value	The data of page: 3, address: 03 is "00"

Note 1: Check that the data of page: 0, address: 10 is "00".

Initial Value of Page C: Address: B2 to C7

Address	Initial value	Address	Initial value	Address	Initial value
B2	00	BA	00	C2	80
B3	00	BB	00	C3	00
B4	00	BC	00	C4	00
B5	00	BD	00	C5	00
B6	00	BE	00	C6	00
B7	80	BF	00	C7	00
B8	00	C0	00		
B9	00	C1	00		

Table 6-3-4

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3				Check that the data of page: C, address: B2 to C7 is the initial value. (See Table 6-3-4)
4				Playback the recorded signal at "Preparations before adjustments".
5	3	03	FF	Press PAUSE (Write) button.
6	3	01	40	Press PAUSE (Write) button.
7	3	02		Check the data changes to "00".
8	3	03		Check the data is "00". (Note 2)
9	3	01	00	Press PAUSE (Write) button.
10				Perform "Processing after Completing Adjustments".

Note 2: If the data is other than "00", Error rate is abnormal. For the contents of the abnormality, see the following table.

Data of page: 3, address: 03	Contents of defect
01	EVEN channel is abnormal.
02	ODD channel is abnormal.
03	EVEN channel and ODD channel are abnormal.

Note 3: If Error rate is abnormal, Check the use tape, clean the tape running surface. And after inputting initial values to page C: address: B2 to C7, perform re-adjustment. (See Table 6-3-4)

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	0	10	01	
3	C (1C)	0D	00	Press PAUSE (Write) button.
4	0	10	00	
5	3	70	10	Press PAUSE (Write) button.
6	3	70		Check the data changes to "11".
7	0	01	00	

5. Processing After Adjustments

Set the data after “CAP FG duty adjustment”, “Switching position adjustment”, “SD error rate check”.

Data change method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	C4	00	
3	3	C5	00	
4	0	01	00	

3-4. VIDEO SYSTEM ADJUSTMENTS

Before perform the video system adjustments, check that the specified values of "Origin Oscillation Check" of "1-3. CAMERA SYSTEM ADJUSTMENTS" is satisfied.
Check that the data of page: 0, address: 10 is "00".
If not, select page: 0, address: 10, and set the data "00".

Adjusting Procedure:

1. S VIDEO OUT Y level adjustment
2. S VIDEO OUT chroma level adjustment
3. VIDEO OUT level check
4. COMPONENT OUT Y level adjustment
5. COMPONENT OUT Pr level adjustment
6. COMPONENT OUT Pb level adjustment

1. S VIDEO, VIDEO OUT Adjustment

1-1. Preparations

Perform the following data setting before the "S VIDEO, VIDEO OUT Adjustment".

Order	Page	Address	Data	Procedure
1				Set the unit to VCR mode.
2	0	01	01	
3	7	83	03	
4	3	71	01	Press PAUSE (Write) button.
5	0	10	01	
6	C (1C)	0F	10	Press PAUSE (Write) button.
7	8 (18)	00	01	Press PAUSE (Write) button.
8	8 (18)	01	60	Press PAUSE (Write) button.
9	8 (18)	06	55	Press PAUSE (Write) button.
10	8 (18)	04	C0	Press PAUSE (Write) button.
11				Wait for 3.5 seconds.
12	0	10	00	
13	0	FF	3E	
14	B	00	02	
15	C	85		Check the data is "55".
16	0	FF	00	

1-2. S VIDEO OUT Y Level Adjustment (VC-543 board)

Mode	VCR mode
Signal	No signal
Measurement Point	Y signal terminal of S VIDEO plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	25 (NTSC) 7E (PAL)
Specified value	A = 1000 ± 14 mVp-p

Adjusting method for NTSC model:

Order	Page	Address	Data	Procedure
1				Perform "Preparations"
2	C	25		Change the data and set the Y signal level (A) to the specified value.
3	C	25		Press PAUSE (Write) button.
4	C	7E		Set a value obtained by subtracting 3 from the fore mentioned data, and press PAUSE (Write) button.
5				Perform "Processing after Complete Adjustment".

Adjusting method for PAL model:

Order	Page	Address	Data	Procedure
1				Perform "Preparations"
2	C	7E		Change the data and set the Y signal level (A) to the specified value.
3	C	7E		Press PAUSE (Write) button.
4	C	25		Set a value obtained by adding 3 to the fore mentioned data, and press PAUSE (Write) button.
5				Perform "Processing after Complete Adjustment".

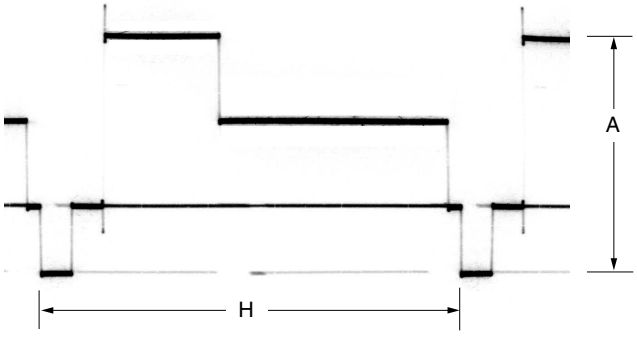


Fig. 6-3-3

1-3. S VIDEO OUT Chroma Level Adjustment (VC-543 board)

Mode	VCR mode
Signal	No signal
Measurement Point	Chroma signal terminal of S VIDEO plug of A/V Remote connector (75 Ω terminated) External trigger: Y signal terminal of S VIDEO plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	26, 27 (NTSC) 7F, 80 (PAL)
Specified value	Cr level: A = 714 ± 14 mVp-p (NTSC) A = 700 ± 14 mVp-p (PAL) Cb level: B = 714 ± 14 mVp-p (NTSC) B = 700 ± 14 mVp-p (PAL) Burst level: C = 286 ± 6 mVp-p (NTSC) C = 300 ± 6 mVp-p (PAL)

Adjusting method for NTSC model:

Order	Page	Address	Data	Procedure
1				Perform “Preparations”
2	C	26		Change the data and set the Cr signal level (A) to the specified value.
3	C	26		Press PAUSE (Write) button.
4	C	7F		Set a value obtained by subtracting 5 from the fore mentioned data, and press PAUSE (Write) button.
5	C	27		Change the data and set the Cb signal level (B) to the specified value.
6	C	27		Press PAUSE (Write) button.
7	C	80		Set a value obtained by subtracting 3 from the fore mentioned data, and press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9				Perform “Processing after Complete Adjustment”.

Adjusting method for PAL model:

Order	Page	Address	Data	Procedure
1				Perform “Preparations”
2	C	7F		Change the data and set the Cr signal level (A) to the specified value.
3	C	7F		Press PAUSE (Write) button.
4	C	26		Set a value obtained by adding 5 to the fore mentioned data, and press PAUSE (Write) button.
5	C	80		Change the data and set the Cb signal level (B) to the specified value.
6	C	80		Press PAUSE (Write) button.
7	C	27		Set a value obtained by adding 3 to the fore mentioned data, and press PAUSE (Write) button.
8				Check the burst signal (C) to the specified value.
9				Perform “Processing after Complete Adjustment”.

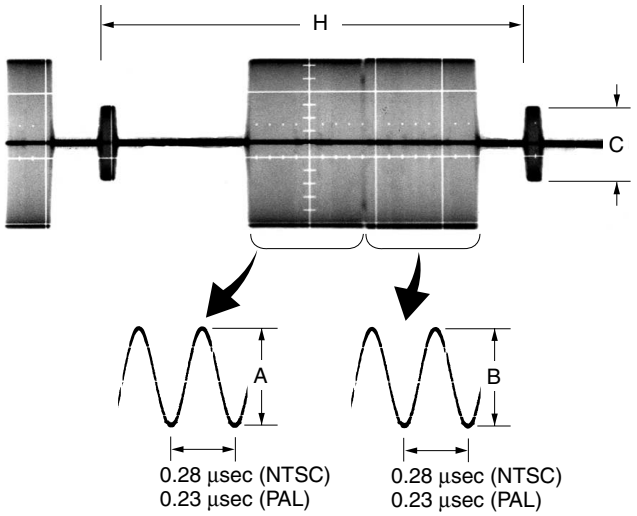


Fig. 6-3-4

1-4. VIDEO OUT Level Check (VC-543 board)

Mode	VCR mode
Signal	No signal
Measurement Point	VIDEO OUT plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Specified value	Sync level: A = 286 ± 18 mVp-p (NTSC) A = 300 ± 18 mVp-p (PAL) Burst level: B = 286 ± 18 mVp-p (NTSC) B = 300 ± 18 mVp-p (PAL)

Checking method:

Order	Page	Address	Data	Procedure
1				Perform “Preparations”
2				Check the sync signal level (A) to the specified value.
3				Check the burst signal level (B) to the specified value.
4				Perform “Processing after Complete Adjustment”.

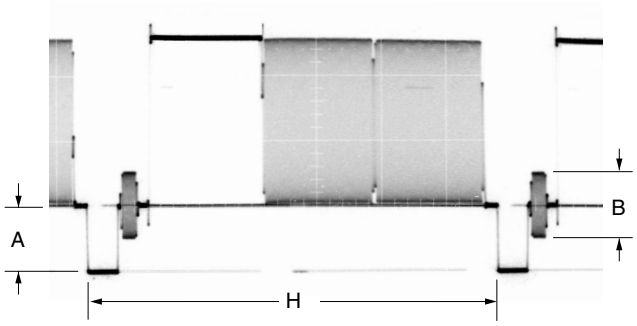


Fig. 6-3-5

1-5. Processing after Complete Adjustment

Perform the setting through the procedure mentioned below when you finish the “S VIDEO, VIDEO OUT Adjustment”.

Order	Page	Address	Data	Procedure
1	0	10	01	
2	C (1C)	0F	00	Press PAUSE (Write) button.
3	8 (18)	04	80	Press PAUSE (Write) button.
4	8 (18)	00	00	Press PAUSE (Write) button.
5	8 (18)	01	00	Press PAUSE (Write) button.
6	8 (18)	06	00	Press PAUSE (Write) button.
7	0	10	00	
8	3	70	10	Press PAUSE (Write) button.
9	3	70		Check the data changes to “11”.
10	7	83	00	
11	0	01	00	

2. COMPONENT OUT Y Level Adjustment (VC-543 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	Y signal terminal of COMPONENT OUT plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8C
Specified value	Y level: A = 1000 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	83	02	
3	3	71	01	Press PAUSE (Write) button.
4	0	10	01	
5	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
6	8 (18)	5D	05	Press PAUSE (Write) button.
7	0	10	00	
8	C	8C		Change the data and set the Y signal level (A) to the specified value.
8	C	8C		Press PAUSE (Write) button.
10				Check the sync signal (B, C) to the specified value.
11	0	10	01	
12	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
13	8 (18)	5D	00	Press PAUSE (Write) button.
14	0	10	00	
15	3	70	10	Press PAUSE (Write) button.
16	3	70		Check the data changes to "11".
17	7	83	00	
18	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

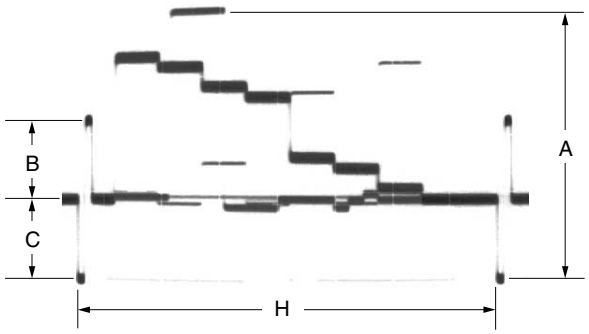


Fig. 6-3-6

3. COMPONENT OUT Pr Level Adjustment (VC-543 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	P_r/C_r signal terminal of COMPONENT OUT plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8E
Specified value	Pr level: A = 525 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	83	02	
3	3	71	01	Press PAUSE (Write) button.
4	0	10	01	
5	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
6	8 (18)	5D	05	Press PAUSE (Write) button.
7	0	10	00	
8	C	8E		Change the data and set the Pr signal level (A) to the specified value.
9	C	8E		Press PAUSE (Write) button.
10				Check the sync signal (B, C) to the specified value.
11	0	10	01	
12	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
13	8 (18)	5D	00	Press PAUSE (Write) button.
14	0	10	00	
15	3	70	10	Press PAUSE (Write) button.
16	3	70		Check the data changes to "11".
17	7	83	00	
18	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

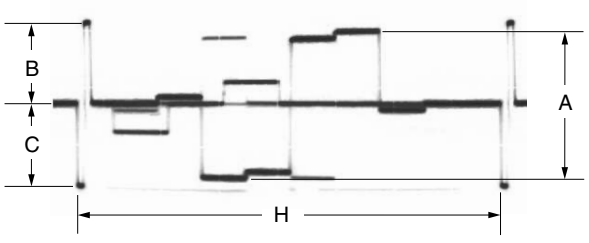


Fig. 6-3-7

4. COMPONENT OUT Pb Level Adjustment (VC-543 board)

Mode	CAMERA mode
Subject	Arbitrary
Measurement Point	P_b/C_b signal terminal of COMPONENT OUT plug of A/V Remote connector (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	C
Adjustment Address	8D
Specified value	Pb level: A = 525 ± 10 mVp-p Sync level: B = C = 300 ± 10 mVp-p

Switch setting:

1) REC FORMAT (Menu setting) HDV1080i

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	7	83	02	
3	3	71	01	Press PAUSE (Write) button.
4	0	10	01	
5	8 (18)	5C		Set the bit value of bit0 is "1", and press PAUSE (Write) button. (Note)
6	8 (18)	5D	05	Press PAUSE (Write) button.
7	0	10	00	
8	C	8D		Change the data and set the Pb signal level (A) to the specified value.
9	C	8D		Press PAUSE (Write) button.
10				Check the sync signal (B, C) to the specified value.
11	0	10	01	
12	8 (18)	5C		Set the bit value of bit0 is "0", and press PAUSE (Write) button. (Note)
13	8 (18)	5D	00	Press PAUSE (Write) button.
14	0	10	00	
15	3	70	10	Press PAUSE (Write) button.
16	3	70		Check the data changes to "11".
17	7	83	00	
18	0	01	00	

Note: For the bit values, refer to "6-4. SERVICE MODE", "4-4. 3. Bit value discrimination".

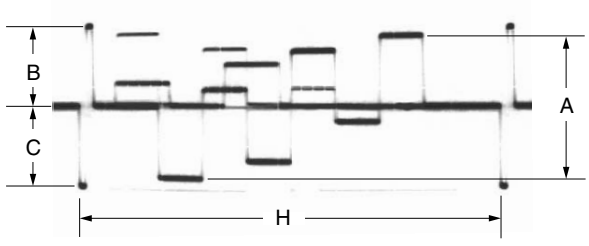


Fig. 6-3-8

3-5. AUDIO SYSTEM ADJUSTMENTS

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments as shown in Fig. 6-3-9.

Menu setting (AUDIO SET menu)

XLR SET

1) AU. MAN GAIN ..... SEPARATE

Switch setting

1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) AUTO/MAN (Manual) switch (CH1/CH2) ..... AUTO
4) INPUT switch (CH1/CH2) ..... LINE

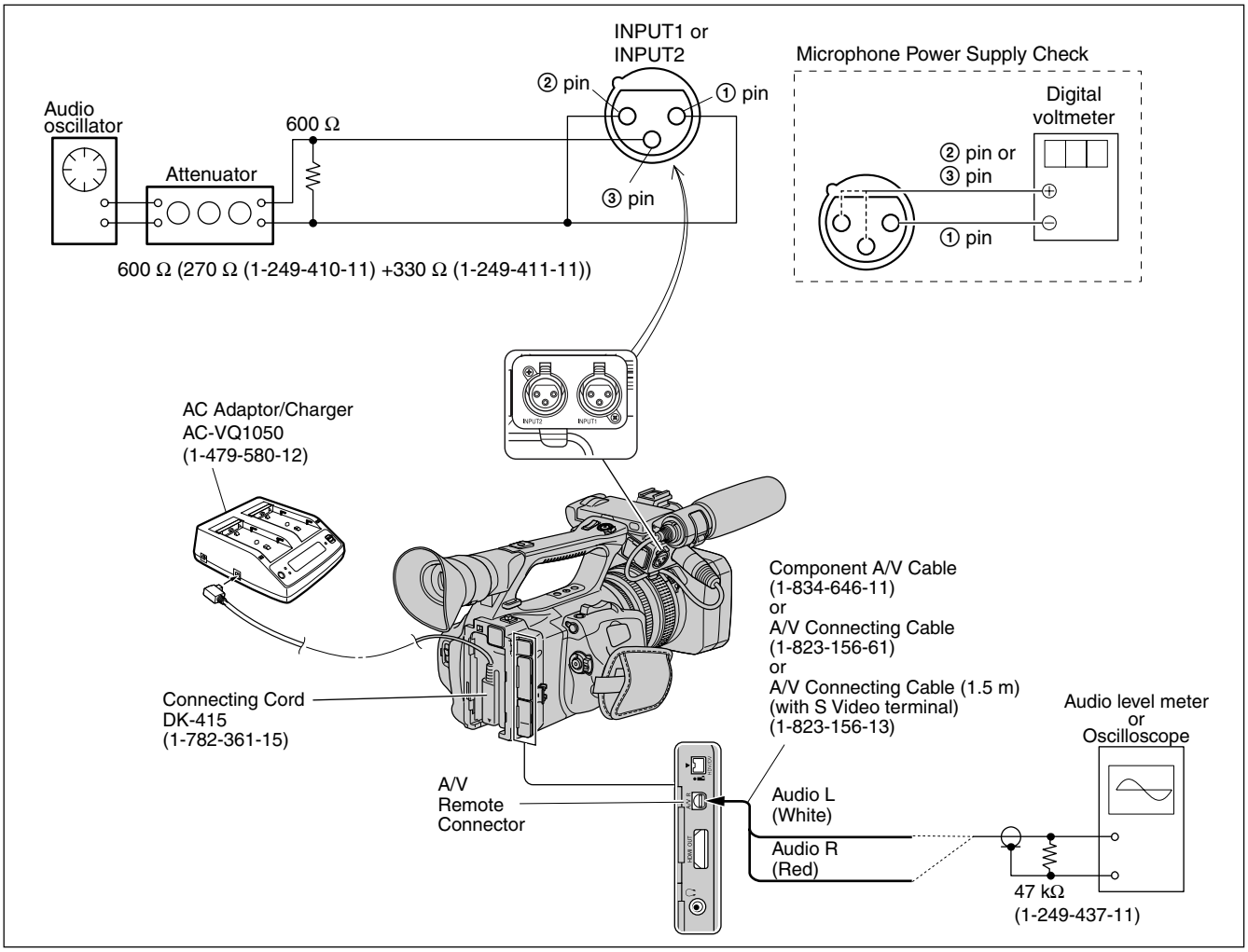


Fig. 6-3-9

1. Signal Output Check

Mode	VCR mode (PANEL open)
Signal	Test tone generation (1kHz, 0 dB)
Measurement Point	Audio L and R terminal of A/V Remote Connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	LINE OUT: +10 dBs ±1 dB (NTSC) +8 dBs ±1 dB (PAL) (Note 2)

Note 1: 0 dBs = 0.775 Vrms
Note 2: The level difference between Lch and Rch must be within ± 0.5dB.
Note 3: NTSC model: HVR-Z5J/Z5N/Z5U
PAL model: HVR-Z5C/Z5E/Z5P

Checking method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 10, and set data: 01.
3) Select page: 8 (18) , address: 5C, and set data: 05.
4) Check that the sound is output from the speaker.
5) Check that the sound from the speaker is interrupted when the LCD panel is closed.
6) Check that the sound from the speaker is interrupted when the plug is inserted in the headphone jack, and also that the sounds are output from the left and right sides of headphone.
7) Select page: 0, address: 10, and set data: 00.
8) Select page: 2, address: EA, and check the following bit value.
If bit value of bit 1 is 1: NTSC model
If bit value of bit 1 is 0: PAL model
9) Check that the Lch and Rch output level of A/V Remote Connector is within the specified value.
10) Check the Rch output level against the Lch output level is satisfied the specified value.
11) Select page: 0, address: 10, and set data: 01.
12) Select page: 8 (18), address: 5C, and set data: 00
13) Select page: 0, address: 10, and set data: 00
14) Select page: 0, address: 01, and set data: 00.

2. INPUT1 LINE Check

Mode	CAMERA mode
Signal	1 kHz, 0 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V Remote Connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–14 dBs ± 4 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT1 switch ..... LINE

Checking method:
1) Input 1 kHz, 0 dBu signal in the XLR terminal (INPUT1).
2) Check that the 1 kHz signal level is the specified value.
3) Take a note of the Lch level.

3. INPUT2 LINE Check

Mode	CAMERA mode
Signal	1 kHz, 0 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V Remote Connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–14 dBs ± 4 dB (Note 3)

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms
Note 3: The level difference between Lch and Rch must be within ± 1dB.

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT2 switch ..... LINE

Checking method:
1) Input 1 kHz, 0 dBu signal in the XLR terminal (INPUT2).
2) Check that the 1 kHz signal level is the specified value.
3) Check the Rch output level against the Lch output level taken in the item “2. INPUT1 LINE Check” is satisfied the specified value.

4. INPUT1 MIC Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V Remote Connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–12 dBs ± 2 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT1 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Check that the 1 kHz signal level is the specified value.
3) Take a note of the Lch level.

5. INPUT2 MIC Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V Remote Connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value	–12 dBs ± 2 dB (Note 3)

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms
Note 3: The level difference between Lch and Rch must be within ± 1dB.

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT2 switch ..... MIC

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT2).
2) Check that the 1 kHz signal level is the specified value.
3) Check the Rch output level against the Lch output level taken in the item “4. INPUT1 MIC Check” is satisfied the specified value.

6. INPUT1 MIC ATT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V Remote Connector
Measuring Instrument	Audio level meter
Specified value (INPUT1 TRIM: –6 dB)	–18 dBs ± 2 dB

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT1 switch ..... MIC
4) AUTO/MAN switch (CH1) ..... AUTO

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Set the INPUT1 TRIM (AUDIO SET menu: XLR SET) to “–6dB”.
3) Check that the 1 kHz signal level is the specified value.
4) Set the INPUT1 TRIM (AUDIO SET menu: XLR SET) to “0dB”.
5) Take a note of the Lch level.

7. INPUT2 MIC ATT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V Remote Connector
Measuring Instrument	Audio level meter
Specified value (INPUT2 TRIM: –6 dB)	–18 dBs ± 2 dB (Note 3)

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT2 switch ..... MIC
4) AUTO/MAN switch (CH2) ..... AUTO

Checking method:
1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT2).
2) Set the INPUT2 TRIM (AUDIO SET menu: XLR SET) to “–6dB”.
3) Check that the 1 kHz signal level is the specified value.
4) Set the INPUT2 TRIM (AUDIO SET menu: XLR SET) to “0dB”.

8. Audio Level Control Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1, 2)
Measurement Point	Audio L and R terminal of A/V Remote Connector
Measuring Instrument	Oscilloscope

Note 1: 0 dBu = 0.775 Vrms/balance

Switch setting

1) INPUT1 switch ..... MIC
2) INPUT2 switch ..... MIC
3) AUTO/MAN switch (CH1) ..... MAN
4) AUTO/MAN switch (CH2) ..... MAN

Checking method:

1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1, 2).
2) Press the STATUS CHECK button to display the Audio Information screen.
3) Rotating the CH1 AUDIO LEVEL control, check that Lch waveform level of A/V Remote Connector varies.
4) Rotating the CH2 AUDIO LEVEL control, check that Rch waveform level of A/V Remote Connector varies.

Note 2: Along with the waveform check with the oscilloscope, check that the level meter on the STATUS CHECK screen varies.

9. INPUT SELECT Check

Mode	CAMERA mode
Signal	1 kHz, –50 dBu signal: XLR terminal (INPUT1) 100 Hz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio L and R terminal of A/V Remote Connector
Measuring Instrument	Oscilloscope
Specified value (INPUT SELECT (CH2): INPUT2)	Audio L: 1 kHz signal Audio R: 100 Hz signal
Specified value (INPUT SELECT: (CH2): INPUT1)	Audio L: 1 kHz signal Audio R: 1 kHz signal

Note: 0 dBu = 0.775 Vrms/balance

Switch setting

1) INPUT1 switch ..... MIC
2) INPUT2 switch ..... MIC
3) AUTO/MAN switch (CH1) ..... AUTO
4) AUTO/MAN switch (CH2) ..... AUTO
5) INPUT SELECT (CH1) switch INPUT1

Checking method:

1) Input 1 kHz, –50 dBu signal in the XLR terminal (INPUT1).
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT2).
3) Set the INPUT SELECT (CH2) switch to “INPUT2”.
4) Check that the 1 kHz signal is output from the audio L terminal.
5) Check that the 100 Hz signal is output from the audio R terminal.
6) Set the INPUT SELECT (CH2) switch to “INPUT1”.
7) Check that the 1 kHz signal is output from the audio L terminal.
8) Check that the 1 kHz signal is output from the audio R terminal.

10. INPUT1 MIC WIND Filter Check

Mode	CAMERA mode
Signal	100 Hz, –50 dBu signal: XLR terminal (INPUT1)
Measurement Point	Audio L terminal of A/V Remote connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value (INPUT1 WIND OFF)	–13 dBs ± 2 dB
Specified value (INPUT1 WIND ON)	–23 dBs ± 5 dB
Specified value (INPUT1 WIND ON /OFF difference)	–10 dB ± 3 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT1 switch ..... MIC

Checking method:
1) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "OFF".
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT1).
3) Check that the 100 Hz signal level is the specified value.
4) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "ON".
5) Check that the 100 Hz signal level is the specified value.
6) Check the level difference between INPUT1 WIND ON and OFF is satisfied the specified value.
7) Set the INPUT1 WIND (AUDIO SET menu: XLR SET) to "OFF".

11. INPUT2 MIC WIND Filter Check

Mode	CAMERA mode
Signal	100 Hz, –50 dBu signal: XLR terminal (INPUT2)
Measurement Point	Audio R terminal of A/V Remote connector
Measuring Instrument	Audio level meter, Oscilloscope
Specified value (INPUT2 WIND OFF)	–13 dBs ± 2 dB
Specified value (INPUT2 WIND ON)	–23 dBs ± 5 dB
Specified value (INPUT2 WIND ON /OFF difference)	–10 dB ± 3 dB

Note 1: 0 dBu = 0.775 Vrms/balance
Note 2: 0 dBs = 0.775 Vrms

Switch setting
1) INPUT SELECT (CH1) switch INPUT1
2) INPUT SELECT (CH2) switch INPUT2
3) INPUT2 switch ..... MIC

Checking method:
1) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "OFF".
2) Input 100 Hz, –50 dBu signal in the XLR terminal (INPUT2).
3) Check that the 100 Hz signal level is the specified value.
4) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "ON".
5) Check that the 100 Hz signal level is the specified value.
6) Check the level difference between INPUT2 WIND ON and OFF is satisfied the specified value.
7) Set the INPUT2 WIND (AUDIO SET menu: XLR SET) to "OFF".

12. Microphone Power Supply Check

Mode	CAMERA mode
Signal	No signal
Measurement Point	XLR terminal (INPUT1, INPUT2) + probe: pin ②, ③ – probe: pin ①
Measuring Instrument	Digital voltmeter
Specified value	A = 1 V or less B = 46.0 ± 3.0 V

Checking method:
1) Connect the + probe of digital voltmeter to the pin ② on the INPUT1.
2) Check that the DC voltage (A) satisfies the specified value.
3) Connect the + probe of digital voltmeter to the pin ③ on the INPUT1.
4) Check that the DC voltage (A) satisfies the specified value.
5) Set the +48V switch (INPUT1) to "MIC+48 V".
6) Connect the + probe of digital voltmeter to the pin ② on the INPUT1.
7) Check that the DC voltage (B) satisfies the specified value.
8) Connect the + probe of digital voltmeter to the pin ③ on the INPUT1.
9) Check that the DC voltage (B) satisfies the specified value.
10) Set the +48V switch (INPUT1) to "LINE".
11) For the INPUT2, perform checking in the same manner.

6-4. SERVICE MODE

4-1. ADJUSTMENT REMOTE COMMANDER (RM-95)

The adjustment remote commander (RM-95) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (RM-95) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (RM-95)

1) Connect the adjustment remote commander to the LANC terminal.
2) Set the HOLD switch of the adjustment remote commander (RM-95) to "HOLD" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (RM-95) will display as shown in Fig. 6-4-1.

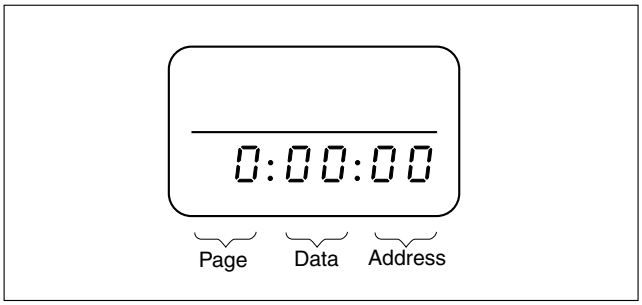


Fig. 6-4-1

3) Operate the adjustment remote commander (RM-95) as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (RM-95)

Mishandling of the adjustment remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-2. ADJUSTMENT REMOTE COMMANDER (NEW LANC JIG)

The adjustment remote commander (New LANC Jig) is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjustment remote commander (New LANC Jig) performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the Adjustment Remote Commander (New LANC Jig))

1) Connect the adjustment remote commander (New LANC Jig) to the LANC terminal via the LANC cable (J-6082-442-A).
2) Set the slide switch of the adjustment remote commander (New LANC Jig) to "SERVICE" (SERVICE position). If it has been properly connected, the LCD on the adjustment remote commander (New LANC Jig) will display as shown in Fig. 6-4-2.

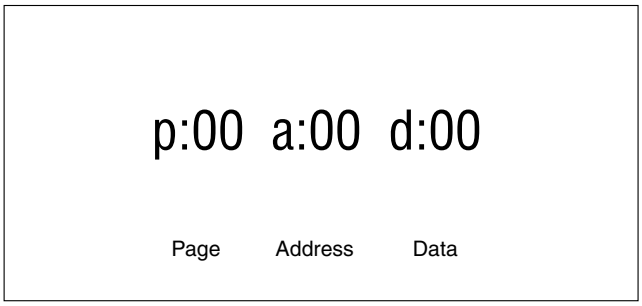


Fig. 6-4-2

3) Operate the adjustment remote commander (New LANC Jig) as follows.
   - Changing the page
     The page increases when the Page+ (▶▶) button is pressed, and decreases when the Page– (◀◀) button is pressed.
   - Changing the address
     The address increases when the ADD+ (▶) button is pressed, and decreases when the ADD– (▮▮) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the Data+ button is pressed, and decreases when the Data– button is pressed. There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The Write (■) button must be pressed to write the adjustment data in the nonvolatile memory. (The new adjusting data will not be recorded in the nonvolatile memory if this step is not performed)
4) After completing all adjustments, turn off the main power supply (8.4 V) once.

2. Precautions Upon Using the Adjustment Remote Commander (New LANC Jig)

Mishandling of the adjustment remote commander (New LANC Jig) may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

4-3. DATA PROCESS

The calculation of the DDS display and the adjustment remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Indicates the hexadecimal-decimal conversion table.

Hexadecimal-decimal Conversion Table ②

Lower digit of hexadecimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	77	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: The characters shown in the parenthesis ( ) shown the display on the adjustment remote commander.

(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the adjustment number is B (b), and the lower digit is D (d), the meeting point "189" of ① and ② in the above table is the corresponding decimal number.

Table 6-4-1

4-4. SERVICE MODE

Note: Before performing the adjustment, check the data of page: 0, address: 10 is “00”. If not, select page: 0, address: 00, and set data “00”.

1. Setting the Test Mode

Page A	Address 10

Data	Function
00	Normal
01	Forced camera power ON (CAMERA mode)
02	Forced VTR power ON (VCR mode)
03	Forced camera + VTR power ON

- Before setting the data , select page: 0, address: 01, and set data: 01.
- For page A, the data set will be recorded in the non-volatile memory by pressing the PAUSE (Write) button of the adjustment remote commander. In this case, take note that the test mode will not be exited even when the main power is turned off (8.4 Vdc).
- After completing adjustments/repairs, be sure to return the data of this address to 00, and press the PAUSE (Write) button of the adjustment remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergence Memory Address

2-1. Emergence Memory Address (Mechanism section)

Page C	Address F4 to FF

Address	Contents
F4	EMG code when first error occurs
F6	Upper: MSW code when shift starts when first error occurs Lower: MSW code when first error occurs
F7	Lower: MSW code to be moved when first error occurs
F8	EMG code when second error occurs
FA	Upper: MSW code when shift starts when second error occurs Lower: MSW code when second error occurs
FB	Lower: MSW code to be moved when second error occurs
FC	EMG code when last error occurs
FE	Upper: MSW code when shift starts when last error occurs Lower: MSW code when last error occurs
FF	Lower: MSW code to be moved when last error occurs

When no error occurs in this unit, data “00” is written in the above addresses (F4 to FF). when first error occurs in the unit, the data corresponding to the error is written in the first emergency address (F4 to F7). In the same way, when the second error occurs, the data corresponding to the error is written in the second emergency address (F8 to FB).
Finally, when the last error occurs, the data corresponding to the error is written in the last emergency address (FC to FF).

Note: After completing adjustments, be sure to initialize the data of addresses F4 to FF to “00”.

Initializing method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	3	71	01	Press PAUSE (Write) button.
3	3	03	FF	Press PAUSE (Write) button.
4	3	01	37	Press PAUSE (Write) button.
5	3	02		Check the data changes to “00”.
6	3	03		Check the data changes to “00”.
7	3	70	10	Press PAUSE (Write) button.
8	3	70		Check the data changes to “11”.
9	0	01	01	

2-2. EMG Code (Emergency Code)

Codes corresponding to the errors which occur are written in C page, addresses F4, F8 and FC . The type of error indicated by the code are shown in the following table.

Code	Emergency Type
00	No error
10	Loading motor emergency during loading
11	Loading motor emergency during unloading
22	T reel emergency during normal rotation
23	S reel emergency during normal rotation
24	T reel emergency (Short circuit between S reel terminal and T reel terminal)
30	FG emergency at the start up of the capstan
40	FG emergency at the start up of the drum
42	FG emergency during normal rotation of the drum

2-3. MSW Code

MSW when errors occur:

Information on MSW (mode SW) when errors occur

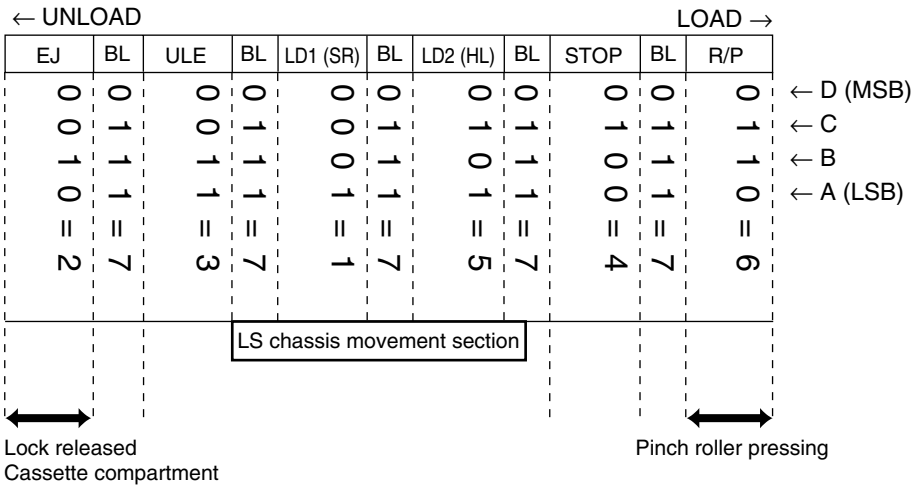
MSW when movement starts:

Information on MSW when movements starts when the mechanism position is moved (When the L motor is moved)

MSW of target of movement:

Information on target MSW of movement when the mechanism position is moved

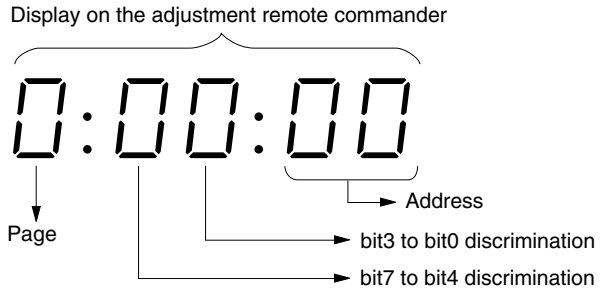
Mechanical Position



Position	Code	Contents
EJ	2	Position at which the cassette component lock is released, at the farthest unload side mechanically at which the mechanism can move no further in the UNLOAD direction.
BL	7	BLANK code, at the boundary between codes.
ULE	3	EJECT completion position. when the cassette is ejected, the mechanism will stop at this position. Cassette IN standby. The guide will start protruding out as the mechanism moves towards the LOAD position.
LD1 (SR)	1	When preparing TOP load processing or when DEW is detected, rolling up tape by T reel is preformed at this position.
LD2 (HL)	5	When preparing TOP load processing or when DEW is detected, rolling up tape by S reel is preformed at this position.
STOP	4	Stop position in the loading state. The pinch roller separates, the tension regulator returns, and the brake is imposed on both reels.
R/P	6	PB, REC, CUE, REVIEW, PAUSE, FF, REW positions. When pinch roller is pressed, and the tension regulator is ON, the mechanism is operating at this position in modes in which normal images are shown.
NULL	0	Code not existing in the MD. Default value.
	F	Status before finding any mechanism position.

3. Bit Value Discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is "1" or "0".



(Example) If the remote commander display is "8E", bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A (A)	1	0	1	0
	B (b)	1	0	1	1
	C (C)	1	1	0	0
	D (d)	1	1	0	1
Ⓑ	E (E)	1	1	1	0
	F (F)	1	1	1	1

4. Jack Check (1)

Page 7	Address FF

Bit	Function	When bit value = 1	When bit value = 0
2	A/V Remote Connector (JK-376 board CN9508)	Used (Component A/V)	Not used
3	A/V Remote Connector (JK-376 board CN9508)	Used (Composite A/V multi)	Not used

Using method:

1) Select page: 7, address: FF.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

5. Jack Check (2)

Page 3	Address CF

Bit	Function	When bit value = 1	When bit value = 0
0	HDMI OUT jack (FP-965 flexible CN001)	Used	Not used

Using method:

1) Select page: 3, address: CF.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

6. Switch Check (1)

Page 7	Address 4D, 4E

Address	Bit	Function	When bit value = 1	When bit value = 0
4D	7	AUDIO LEVEL AUTO/MANUAL (CH1) (Control switch block (AU93000) S005)	AUTO	MANUAL
4E	0	AUDIO LEVEL AUTO/MANUAL (CH2) (Control switch block (AU93000) S006)	AUTO	MANUAL

Using method:

1) Select page: 7, address: 4D, 4E.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

7. Switch Check (2)

Page 7	Address 50

Function	S007	S008	bit value		
	CH1	CH2	bit 7	bit 6	bit 1
AUDIO INPUT SELECT (Control switch block (AU93000)) S007: CH1 S008: CH2	INPUT1	INPUT2	0	0	1
	–	INPUT1	–	1	1
	INT MIC	INT MIC	1	1	0

Using method:

1) Select page: 7, address: 50.
2) By discriminating the bit value of display data, the state of jack can be discriminated.

8. Switch Check (3)

Page 2	Address EC

Bit	Function	When bit value = 1	When bit value = 0
0	POWER-VCR (Control switch block (PS24000))	ON	OFF
1	POWER-CAMERA (Control switch block (PS24000))	ON	OFF
2	EJECT (FP-969 flexible S101)	ON	OFF
4	DISPLAY/BATT INFO (KY-105 board S7206)	ON	OFF

Using method:

1) Select page: 2, address: EC.
2) By discriminating the bit value of display data, the state of switch can be discriminated.

9. Switch Check (4)

Page 7	Address 63 to 6B

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

1) Select page: 7, address: 63 to 6B.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00	1B	36	53	77	A0	CF	FF
	00 to 0C	0D to 26	27 to 43	44 to 63	64 to 8A	8B toB6	B7 to E6	E7 to FF
65 (KEY AD0) (VC-543) (IC3601 C5)	REC START/STOP CONTROL SWITCH BLOCK (PS24000) (S301)	–	–	–	–	–	–	–
66 (KEY AD1) (VC-543) (IC3601 B3)	STOP (KY-105) (S7201)	REW (KY-105) (S7204)	REC (KY-105) (S7209, S7211)	PLAY (KY-105) (S7214)	FF (KY-105) (S7216)	SLOW (KY-105) (S7217)	–	–
67 (KEY AD2) (VC-543) (IC3601 B4)	REC START/STOP CONTROL SWITCH BLOCK (GZ92000) (S001)	–	–	–	–	–	–	–
68 (KEY AD3) (VC-543) (IC3601 D2)	MEMORY (VCR) PLAY (KY-105) (S7202)	MEMORY (VCR) INDEX (KY-105) (S7205)	MEMORY (VCR) DELETE (KY-105) (S7210)	PAUSE (KY-105) (S7213)	–	–	PANEL REVERSE (FP-966 FLEXIBLE) (IC402) (HT-002) (S7401)	PANEL NORMAL (FP-966 FLEXIBLE) (IC402) (HT-002) (S7401)
69 (KEY AD4) (VC-543) (IC3601 E2)	PHOTO/ ASSIGN 7 CONTROL SWITCH BLOCK (PZ93000) (S501)	–	VOLUME/ MEMORY + (KY-105) (S7203)	VOLUME/ MEMORY – (KY-105) (S7208)	DATA CODE (KY-105) (S7212)	TC/U-BIT (KY-105) (S7215)	PANEL CLOSE (FP-966 FLEXIBLE) (IC403)	PANEL OPEN (FP-966 FLEXIBLE) (IC403)
6A (KEY AD5) (VC-543) (IC3601 E1)	PICTURE PROFILE CONTROL SWITCH BLOCK (KP24000) (S302)	STATUS CHECK CONTROL SWITCH BLOCK (KP24000) (S303)	■ CONTROL SWITCH BLOCK (CF24000) (S207)	IRIS/ EXPOSURE CONTROL SWITCH BLOCK (CF24000) (S204)	GAIN CONTROL SWITCH BLOCK (CF24000) (S201)	GAIN H CONTROL SWITCH BLOCK (CF24000) (S205)	GAIN L CONTROL SWITCH BLOCK (CF24000) (S205)	GAIN M CONTROL SWITCH BLOCK (CF24000) (S205)
6B (KEY AD6) (VC-543) (IC3601 C2)	ASSIGN 4 (AS-060) (S8801)	ASSIGN 5 (AS-060) (S8802)	ASSIGN 6 (AS-060) (S8803)	WHT BAL CONTROL SWITCH BLOCK (CF24000) (S202)	SHUTTER SPEED CONTROL SWITCH BLOCK (CF24000) (S203)	WHT BAL PRS CONTROL SWITCH BLOCK (CF24000) (S206)	WHT BAL B CONTROL SWITCH BLOCK (CF24000) (S206)	WHT BAL A CONTROL SWITCH BLOCK (CF24000) (S206)
63 (KEY AD7) (VC-543) (IC3601 B5)	SEL/PUSH EXEC CONTROL SWITCH BLOCK (KP24000) (S304)	MENU CONTROL SWITCH BLOCK (KP24000) (S301)	–	–	–	–	AUTO LOCK: AUTO CONTROL SWITCH BLOCK (CF24000) (S208)	AUTO LOCK: MANUAL CONTROL SWITCH BLOCK (CF24000) (S208)
64 (KEY AD8) (VC-543) (IC3601 A3)	ASSIGN 1 CONTROL SWITCH BLOCK (AU93000) (S001)	ASSIGN 2 CONTROL SWITCH BLOCK (AU93000) (S002)	ASSIGN 3 CONTROL SWITCH BLOCK (AU93000) (S003)	PUSH AUTO FOCUS CONTROL SWITCH BLOCK (AU93000) (S004)	–	FOCUS AUTO CONTROL SWITCH BLOCK (AU93000) (S009)	FOCUS INFINITY CONTROL SWITCH BLOCK (AU93000) (S009)	FOCUS MAN CONTROL SWITCH BLOCK (AU93000) (S009)

10. Switch Check (5)

Page 6	Address 6A

Note: Check that the data of page: 0, address: 10 is “00”.

Using method 1:

1) Select page: 6, address: 69, and set data: 01.
2) Select page: 6, address: 6A.
3) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00	1B	36	53	77	A0	CF	FF
	00 to 0C	0D to 27	32 to 3A	4F to 58	73 to 7B	8B to B7	B8 to E6	E7 to FF
6A (BODY AD) (VC-543) (IC4201 ⑳)	–	–	–	–	–	HANDLE ZOOM OFF (GP-025) (S7801)	HANDLE ZOOM FIX (GP-025) (S7801)	HANDLE ZOOM VAR (GP-025) (S7801)

4) Select page: 6, address: 69, and set data: 00

11. LED Check

Page 7	Address 00, 01, 02 and 04

Note: Check that the data of page: 0, address: 10 is “00”.

Using method:

Order	Page	Address	Data	Procedure
1				Set the unit to CAMERA mode.
2	7	01	90	
3	7	02	FF	
4	7	04	01	
5	7	00	01	Press PAUSE (Write) button.
6	7	02		Check the data changes to “01”.
7				Check that the following LED are lit. • Front recording lamp • Rear recording lamp • MS access lamp
8	7	01	90	
9	7	02	FF	
10	7	04	00	
11	7	00	01	Press PAUSE (Write) button.
12	7	02		Check the data changes to “01”.
13	7	00	00	
14	7	01	00	

12. Record of Use Check (1)

Page 7	Address A4 to AF

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (PI-029 board BT7001) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
A4	Power supplying	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A5	time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
A6		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A7	(BCD code)	Minute	
A8	Drum rotation	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
A9	counted time	Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AA		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AB	(BCD code)	Minute	
AC	Tape run time	Hour (H)	100000th place digit and 10000th place digit of counted time (decimal digit)
AD		Hour (M)	1000th place digit and 100th place digit of counted time (decimal digit)
AE		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
AF	(BCD code)	Minute	

Using method:
1) The record of use data is displayed at page: 7, addresses: A4 to AF.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	A4	00	Press PAUSE (Write) button.
2	7	A5	00	Press PAUSE (Write) button.
3	7	A6	00	Press PAUSE (Write) button.
4	7	A7	00	Press PAUSE (Write) button.
5	7	A8	00	Press PAUSE (Write) button.
6	7	A9	00	Press PAUSE (Write) button.
7	7	AA	00	Press PAUSE (Write) button.
8	7	AB	00	Press PAUSE (Write) button.
9	7	AC	00	Press PAUSE (Write) button.
10	7	AD	00	Press PAUSE (Write) button.
11	7	AE	00	Press PAUSE (Write) button.
12	7	AF	00	Press PAUSE (Write) button.

13. Record of Use Check (2)

Page 7	Address 90 to 95

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (PI-029 board BT7001) is removed.
Note 2: When the drum was replaced, initialize the drum rotation counted time.
Note 3: Check that the data of page: 0, address: 10 is "00".

Address	Function		Remarks
90	Eject count with tape	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
91		Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
92	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)
93	Eject count without	Count (H)	100000th place digit and 10000th place digit of Eject count (decimal digit)
94	tape	Count (M)	1000th place digit and 100th place digit of Eject count (decimal digit)
95	(BCD code)	Count (L)	10th place digit and 1st place digit of Eject count (decimal digit)

Using method:
1) The record of use data is displayed at page: 7, addresses: 90 to 95.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	90	00	Press PAUSE (Write) button.
2	7	91	00	Press PAUSE (Write) button.
3	7	92	00	Press PAUSE (Write) button.
4	7	93	00	Press PAUSE (Write) button.
5	7	94	00	Press PAUSE (Write) button.
6	7	95	00	Press PAUSE (Write) button.

14. Record of Use Check (3)

Page 7	Address C8 to CD

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (PI-029 board BT7001) is removed.
Note 2: Check that the data of page: 0, address 10 is "00".

Address	Function		Remarks
C8	User initial power	Year	After setting the clock, set the date of power on next
C9	on date	Month	
CA	(BCD code)	Day	
CB	Final condensation	Year	
CC	occurrence date	Month	
CD	(BCD code)	Day	

Using method:
1) The record of use data is displayed at page: 7, addresses: C8 to CD.

15. Record of Self-diagnosis Check

Page 7	Address B0 to C6

Note 1: This data will not be erased (reset) when the lithium 3 V power supply (PI-029 board BT7001) is removed.
Note 2: Check that the data of page: 0, address 10 is “00”.

Address	Self-diagnosis code
B0	“Repaired by” code (Occurred 1st time) *1
B1	“Block function” code (Occurred 1st time)
B2	“Detailed” code (Occurred 1st time)
B4	“Repaired by” code (Occurred 2nd time) *1
B5	“Block function” code (Occurred 2nd time)
B6	“Detailed” code (Occurred 2nd time)
B8	“Repaired by” code (Occurred 3rd time) *1
B9	“Block function” code (Occurred 3rd time)
BA	“Detailed” code (Occurred 3rd time)
BC	“Repaired by” code (Occurred 4th time) *1
BD	“Block function” code (Occurred 4th time)
BE	“Detailed” code (Occurred 4th time)
C0	“Repaired by” code (Occurred 5th time) *1
C1	“Block function” code (Occurred 5th time)
C2	“Detailed” code (Occurred 5th time)
C4	“Repaired by” code (Occurred the last time) *1
C5	“Block function” code (Occurred the last time)
C6	“Detailed” code (Occurred the last time)

*1 : “01” → “C”, “03” → “E”

Using method:

1) The past self-diagnosis codes are displayed at page: 7, address: BC to C6. Refer to “1-5. SELF-DIAGNOSIS FUNCTION” for detail of the self-diagnosis code.

Initializing method:

Order	Page	Address	Data	Procedure
1	7	01	C0	
2	7	00	01	Press PAUSE button.
3	7	B0 to C6		Check that the data is “00”.
4	7	00	00	
5	7	01	00	

SONY

Digital HD Video Camera Recorder

GB

4-114-858-**11**(1)

SONY

Digital HD Video Camera Recorder

Operating Guide

Before operating the unit, please read this manual thoroughly, and retain it for future reference

HDV 1080i

DVCAM

Mini DV Digital Video Cassette

PROGRESSIVE

InfoLITHIUM L SERIES

MEMORY STICK

HDMI

HVR-Z5E/Z5P

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Read this first

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Notes on use

Types of cassette you can use in your camcorder

Your camcorder is capable of recording in HDV, DVCAM and DV formats.
When recording in HDV/DV format, Sony recommends that you use mini DV cassettes.
When recording in DVCAM format, Sony recommends that you use mini DVCAM cassettes. Your camcorder does not support the Cassette Memory function (p. 116).

The HDV format

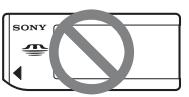
- Digital high-definition (HD) video signals are recorded and played back on a DV format cassette.
- HDV signals are compressed in MPEG2 format, which is adopted in BS (broadcast satellite) digital and terrestrial digital HDTV broadcastings and in Blu-ray disc recorders.

Types of "Memory Stick" you can use in your camcorder

You can use any "Memory Stick" that has the following markings.
MEMORY STICK DUO MEMORY STICK PRO DUO
MEMORY STICK PRO-HG DUO

"Memory Stick Duo"
(This size can be used with your camcorder.)

"Memory Stick"
(You cannot use it in your camcorder.)



Notes

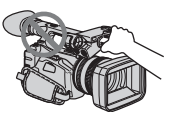
- You cannot use any type of memory card except "Memory Stick Duo."
- "Memory Stick PRO Duo" can be used only with "Memory Stick PRO" compatible equipment.
- Do not attach a label or the like on a "Memory Stick Duo" or a "Memory Stick Duo" Adaptor.
- When using a "Memory Stick Duo" with "Memory Stick" compatible equipment, insert the "Memory Stick Duo" into the "Memory Stick Duo" Adaptor.

Using the camcorder

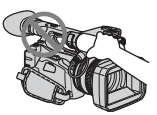
• Do not hold the camcorder by the following part.

Lens hood

LCD panel



Internal microphone



Microphone or Microphone holder

Viewfinder

Notes

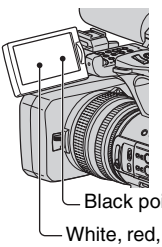
• The camcorder is not dustproof, dripproof or waterproof.
See “About handling of your camcorder” (p. 122).

• Do not connect cables to your camcorder with their terminals placed the wrong way. Squeezing the terminals into your camcorder's jacks may damage them or results in a malfunction of your camcorder.

About menu items, LCD panel, viewfinder, and lens

• A menu item that is grayed out is not available under the current recording or playback conditions.

• The LCD screen and the viewfinder are manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen and the viewfinder. These points are normal results of the manufacturing process and do not affect the recording in any way.



Do not expose your camcorder’s viewfinder, lens, or LCD screen to the sun or strong light source for extended periods.

• Intense light sources, especially the sun will converge on the viewfinder or lens and damage the internal parts of your camcorder. Avoid sunlight or other strong light sources when storing your camcorder. Protect this device by always closing the lens cover or by placing it in its bag when not in use.

About temperature of your camcorder and battery pack

• Your camcorder has a protective function that disables recording or playback if the temperature of your camcorder or battery

Continued ➡

pack is beyond the safely operable range. In this case, a message appears on the screen or in the viewfinder (p. 113).

On recording

- Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems.
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, storage media, etc.
- TV color systems differ depending on the countries/regions. To view your recordings on a TV, you need a PAL system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.
- Because of the way that the image device (CMOS sensor) reads out image signals, the subjects passing by the frame rapidly might appear crooked depending on the recording conditions. This phenomenon may be notable in displays having high motion resolution.

On playing back HDV tapes on other devices

A tape recorded in the HDV format cannot be played back on a device that is not compatible with the HDV format. Check the contents of tapes by playing them back on this camcorder prior to playing them back on other devices.

Notes on the icons used in this manual

HDV1080i Features available for the HDV format only.

DVCAM Features available for the DVCAM format only.

DV SP Features available for the DV SP format only.

i.LINK The function that can be used when i.LINK cable is connected.

(AS) The function that can be assigned to an ASSIGN button.

About this manual

- The images of the LCD screen and the viewfinder used in this manual for illustration purposes are captured using a digital still camera, and therefore may appear different.
- The on-screen displays in each local language are used for illustrating the operating procedures. Change the screen language before using your camcorder if necessary (p. 20).
- Design and specifications of recording media and other accessories are subject to change without notice.
- Illustrations of battery packs in this manual show the NP-F770 unless otherwise specified.

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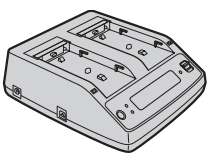
Step 1: Checking supplied items

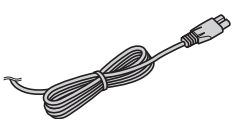
Make sure that you have following items supplied with your camcorder.
The number in the parentheses indicates the number of that item supplied.

- The cassette tape and "Memory Stick Duo" are not included. See pages 2, 116 and 119 for types of cassette tapes and "Memory Stick Duo" that you can use on your camcorder.

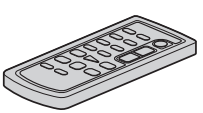
AC Adaptor/Charger (AC-VQ1050) (1) (p. 12)



Power cord (mains lead) (1) (p. 12)

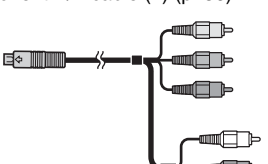


Wireless Remote Commander (RMT-831) (1) (p. 135)

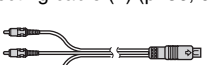


A button-type lithium battery is already installed.

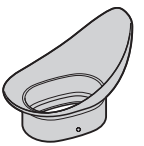
Component A/V cable (1) (p. 56)



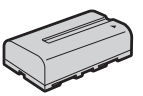
A/V connecting cable (1) (p. 56, 93)



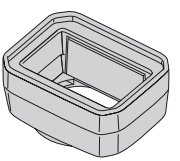
Large eyecup (1) (p. 18)



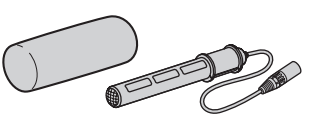
Rechargeable battery pack (NP-F570) (1) (p. 12, 120)



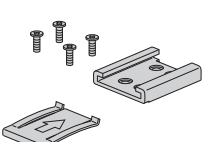
Lens hood with lens cover (1) (p. 11)
This lens hood is pre-mounted.



Wind Screen (1), Microphone (ECM-XM1) (1) (p. 9)



Accessory shoe kit (Accessory shoe (1), Accessory shoe plate (1), screws (4)) (p. 130)



Connecting cord (DK-415) (1) (p. 14)

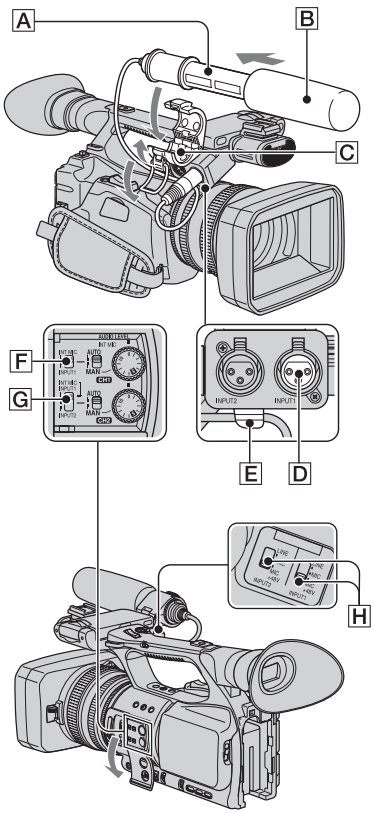
CD-ROM "Manuals for Digital HD Video Camera Recorder" (1)

Operating Guide (2)

Step 2: Attaching the supplied microphone and the lens hood with lens cover

Attaching the supplied microphone

When you use the supplied microphone (ECM-XM1) for recording sound, do the following steps.

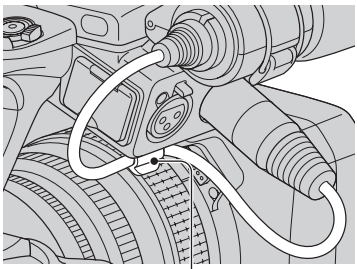


1 **Attach the wind screen B to the supplied microphone A.**

2 **Place the microphone A in the microphone holder C with the model name facing upward, close the cover, and shut the clamp.**

3 **Connect the plug of the microphone to the INPUT1 jack D.**

4 **Put the microphone cable into the cable holder E.**



Put the cable in the outer cable holder.

5 **Select channels with the CH1 (INT MIC/INPUT1) switch F and the CH2 (INT MIC/INPUT1/INPUT2) switch G.**

See the table below for the recording channels.

When the CH1 switch is set to INT MIC

CH2 switch position	Input channel and source	
INT MIC	Internal microphone (L)	CH1
	Internal microphone (R)	CH2*
INPUT1	Internal microphone (mono)	CH1
	XLR INPUT1	CH2**
INPUT2	Internal microphone (mono)	CH1
	XLR INPUT2	CH2**

When the CH1 is set to INPUT1

CH2 switch position	Input channel and source	
INT MIC	XLR INPUT1	CH1
	Internal microphone (mono)	CH2**
INPUT1	XLR INPUT1	CH1
		CH2**
INPUT2	XLR INPUT1	CH1
	XLR INPUT2	CH2**

* The recording level of channel 2 is synchronized with that of channel 1 when only the internal microphone is used. The recording level of channel 2 is controlled with the CH1 (AUDIO LEVEL) dial and the CH1 (AUTO/MAN) switch.

** You can adjust the recording levels of channel 1 and channel 2 separately.

6 Set the INPUT1 switch H to an appropriate position for the microphone connected to the INPUT1 jack D.

LINE: For inputting sound from an audio device

MIC: For inputting sound from an external microphone that does not support the +48V power source.

MIC+48V: For inputting sound from a device that supports the +48V power source including the supplied microphone.

When you connect a microphone to the INPUT2 jack, set the INPUT2 switch to an appropriate position for that microphone.

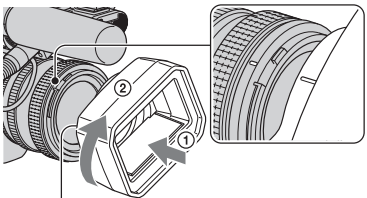
Notes

- When you connect a device that supports the +48V power source to the INPUT1 or INPUT2 jack, set the INPUT1/INPUT2 switch to MIC prior to connecting the device. When you disconnect the device, set the INPUT1/INPUT2 switch to MIC first, then disconnect it.
- When you connect a microphone that does not support the +48V power source to the INPUT1 or INPUT2 jack, set the INPUT1/INPUT2 switch to MIC. If you use it with the INPUT1/INPUT2 switch set to MIC+48V, it may be damaged or the recorded sound may be distorted.

Tips

- See page 42 for adjusting the volume.

Attaching the lens hood with lens cover



PUSH (lens hood release) button

Align the marks on the lens hood to those on the camcorder, and turn the lens hood in the direction of the arrow ②.

To remove the lens hood with lens cover

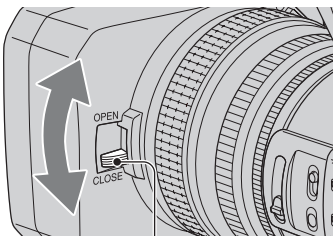
Turn the lens hood in the opposite direction to the arrow ② in the illustration while pressing the PUSH (lens hood release) button.

Tips

- If you attach or remove a 72mm (2 7/8 in.) PL filter or MC protector, remove the lens hood with lens cover.

To open or close the shutter of the lens hood with lens cover

Move the lens cover lever up or down to open or close the lens cover.



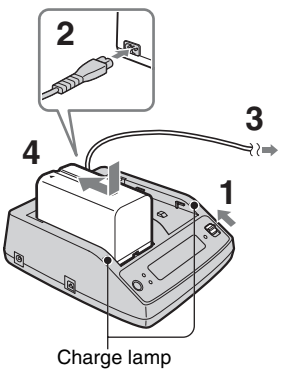
Move the lens cover lever to OPEN to open the lens cover, and move the lever to CLOSE to close the lens cover.

Step 3: Charging the battery pack

You can charge the "InfoLITHIUM" battery pack (L series) with the supplied AC Adaptor/Charger.

Notes

- You cannot use batteries other than the "InfoLITHIUM" battery pack (L series) (p. 120).



1 Set the mode change switch to CHARGE.

2 Connect the power cord (mains lead) to the AC Adaptor/Charger.

3 Connect the power cord (mains lead) to the wall outlet (wall socket).

4 Place the battery pack in the slot of the AC Adaptor/Charger, press it down, and slide it in the direction of the arrow as illustrated.

The charge lamp turns on and charging starts.

After charging the battery

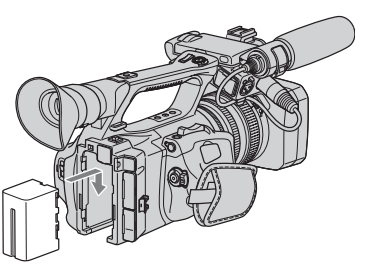
All segments of the battery mark ( ) appear in the display window when the normal charge of the battery is completed. You can fully charge the battery pack if you continue charging the battery pack after the charge lamp turns off until the battery mark with "FULL" appears (full charge). The battery life of the fully charged battery is slightly longer than that of the normally charged battery.
Remove the battery pack from the AC Adaptor/Charger when the charge is completed.

Tips

- You can check the remaining battery life with the battery info function (p. 53).

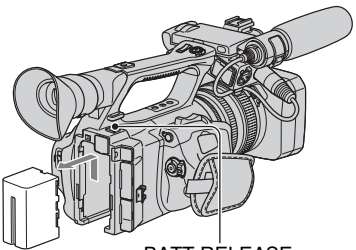
To attach the battery pack

Press the battery pack against the back of your camcorder and slide it down.



To remove the battery pack

Slide the POWER switch to OFF. Push the BATT RELEASE (battery release) button and remove the battery pack.



BATT RELEASE (battery release) button

To store the battery pack

If the battery pack will not be used for a while, run down the battery and store it. See page 121 for details on storage of the battery pack.

Charging time

Approximate time (min.) required when you fully charge a fully discharged battery pack.

Battery pack	Charging time
NP-F570	145
NP-F770	230
NP-F970	310

Notes

- The supplied battery pack is NP-F570.
- You cannot use the NP-F330 battery pack with your camcorder.

Recording time

Approximate time (min.) available when you use a fully charged battery pack.

Recording in the HDV format

Battery pack	Continuous recording time	Typical recording time*
NP-F570	130	65
	130	65
NP-F770	265	130
	275	135
NP-F970	395	195
	410	205

Recording in the DVCAM (DV) format

Battery pack	Continuous recording time	Typical recording time*
NP-F570	130	65
	135	65
NP-F770	275	135
	285	140
NP-F970	410	205
	425	210

Top: When the LCD backlight turns on.
Bottom: When recording with the viewfinder while the LCD panel is closed.

* Typical recording time shows the time when you repeat recording start/stop, turning the power on/off and zooming.

Playing time

Approximate time (min.) available when you use a fully charged battery pack.

HDV format pictures

Battery pack	LCD panel opened*	LCD panel closed
NP-F570	175	180
NP-F770	360	375
NP-F970	545	570

DVCAM (DV) format pictures

Battery pack	LCD panel opened*	LCD panel closed
NP-F570	180	190
NP-F770	375	390
NP-F970	570	595

* When the LCD backlight turns on.

On the battery pack

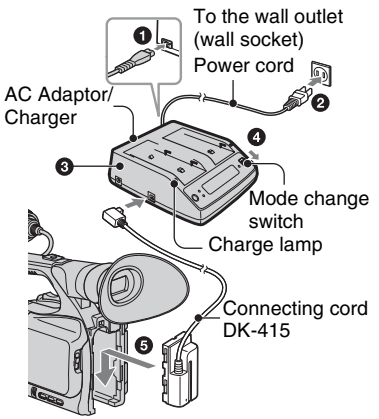
- Before changing the battery pack, slide the POWER switch to OFF.
- The Battery Info (p. 53) will not be correctly displayed under the following conditions.
  - The battery pack is not attached correctly.
  - The battery pack is damaged.
  - The battery pack is worn-out.
- Sony recommends that you use an NP-F970 battery pack when you use your camcorder with the Memory Recording Unit (optional).

On the charging/recording/playback time

- Times measured with the camcorder at 25 °C (77 °F). 10 to 30 °C (50 °F to 86 °F) is recommended.
- The recording and playback time will be shorter when you use your camcorder in low temperatures.
- The recording and playback time will be shorter depending on the conditions under which you use your camcorder.

Using an outside power source

You can use the AC Adaptor/Charger to obtain AC power.



① Connect the power cord (mains lead) to the AC Adaptor/Charger.

② Connect the power cord (mains lead) to the wall outlet (wall socket).

③ Connect the connecting cable (DK-415) to the AC Adaptor/Charger.

④ Set the mode change switch of the AC Adaptor/Charger to VCR/CAMERA.

⑤ Press the connecting part of the connecting cable (DK-415) against the back of your camcorder in the battery slot and slide it down.

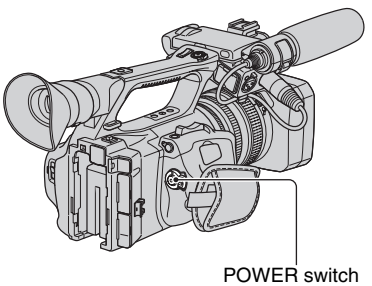
On the AC Adaptor/Charger

- Use the nearby wall outlet when using the AC Adaptor/Charger. Disconnect the AC Adaptor/Charger from the wall outlet (wall socket) immediately if any malfunction occurs while using your camcorder.
- Do not use the AC Adaptor/Charger placed in a narrow space, such as between a wall and furniture.

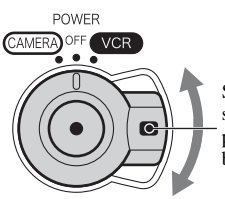
- Do not short-circuit the DC plug of the AC Adaptor/Charger or battery terminal with any metallic objects. This may cause a malfunction.
- Even if your camcorder is turned off, AC power (house current) is still supplied to it while connected to the wall outlet (wall socket) via the AC Adaptor/Charger.

Step 4: Turning the power on and holding your camcorder properly

To record or play back, set the POWER switch to the respective positions.
When you use your camcorder for the first time, the [CLOCK SET] screen appears (p. 19).



1 Slide the POWER switch to CAMERA or VCR while you press the green button.



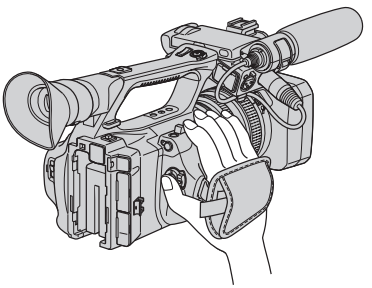
Slide the POWER switch while pressing the green button.

CAMERA: To record pictures.
VCR: To play or edit pictures.

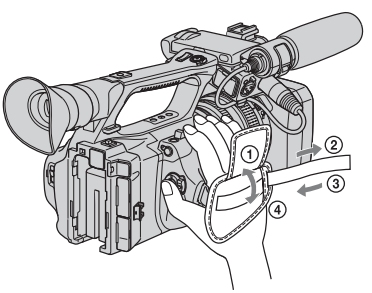
Notes

- The current date and time appear on the LCD screen for a few seconds when you turn on your camcorder once you set the date and time ([CLOCK SET], p. 19).

2 Hold the camcorder properly.



3 Ensure a good grip, then fasten the grip belt.



To turn off the power

Slide the POWER switch to OFF while pressing the green button.

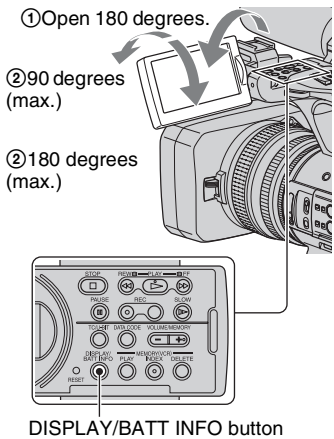
Notes

- If warning messages appear on the screen, follow the instructions.

Step 5: Adjusting the LCD panel and viewfinder

The LCD panel

Open the LCD panel 180 degrees (①), then rotate it to the best angle to record or play back (②).



Tips

- You can see your mirror image on the LCD screen by setting the LCD panel facing you. The image will be recorded in a normal image.

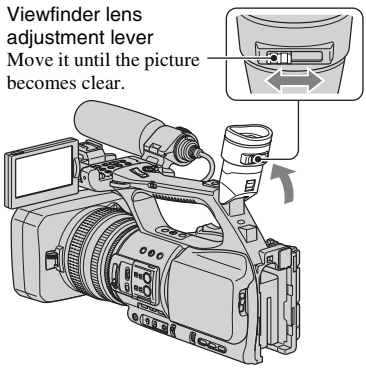
To turn off the LCD backlight to make the battery last longer

Press and hold the DISPLAY/BATT INFO button for a few seconds until OFF appears. This setting is practical when you use your camcorder in bright conditions or when you want to save battery power. The recorded picture will not be affected by the setting. To turn on the LCD backlight, press and hold the DISPLAY/BATT INFO button for a few seconds until OFF disappears.

Tips

- You can adjust the brightness of the LCD screen from [LCD BRIGHT] (p. 81).

The viewfinder



Notes

- You may see primary colors shimmering in the viewfinder when you move your eye line. This is not a malfunction. The shimmering colors will not be recorded on the recording media.

Tips

- You can adjust the brightness of the viewfinder backlight from [VF B.LIGHT] (p. 81).
- To display images both on the LCD display and in the viewfinder, set [VF POWERMODE] to [ON](p. 82).
- To display images in black and white in the viewfinder, set [VF COLOR] to [OFF] (p. 82).

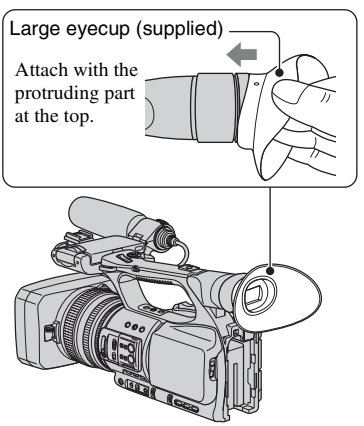
Continued ➡

When the picture in the viewfinder is hard to see

If you cannot see the picture in the viewfinder clearly under bright circumstances, use the supplied large eyecup. To attach the large eyecup, stretch it slightly and align it with the eyecup groove in the viewfinder. You can attach the large eyecup facing either the right or left side.

Notes

- Do not remove the pre-attached eyecup.

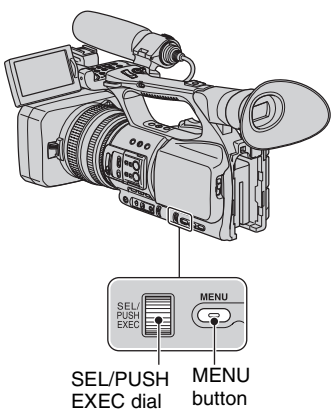


Step 6: Setting the date and time

Set the date and time when using your camcorder for the first time. If you do not set the date and time, [CLOCK SET] screen appears every time you turn on your camcorder or change the POWER switch positions.

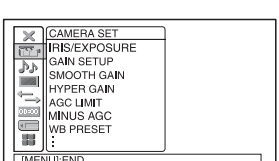
Tips

- If you do not use your camcorder for **about 3 months**, the built-in rechargeable battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable battery and then set the date and time again (p. 125).

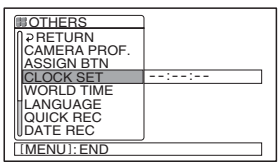


Skip to step **4** when you set the clock for the first time.

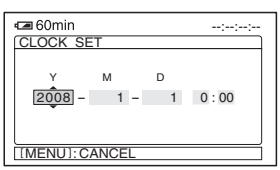
1 Press the MENU button.



2 Select (OTHERS) by turning the SEL/PUSH EXEC dial, then press the dial.

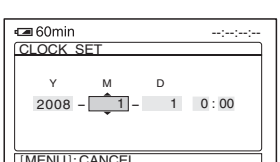


3 Select [CLOCK SET] by turning the SEL/PUSH EXEC dial, then press the dial.



4 Set [Y] (year) by turning the SEL/PUSH EXEC dial, then press the dial.

You can set any year up to the year 2079.



5 Set [M] (month), [D] (day), hour and minute, then press the dial.

The clock starts.

Tips

- The date and time are automatically recorded on the tape, and can be displayed during playback (DATA CODE button, p. 52).

Changing the language setting

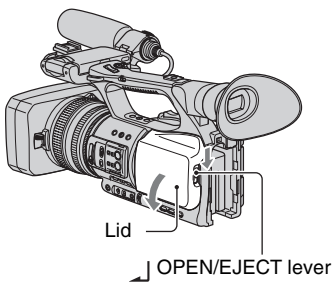
You can change the on-screen displays to show messages in a specified language. Press the MENU button and select the (OTHERS) with the SEL/PUSH EXEC dial. Select the screen language in [LANGUAGE] (p. 91).

Step 7: Inserting a tape or a “Memory Stick Duo”

Cassette tape

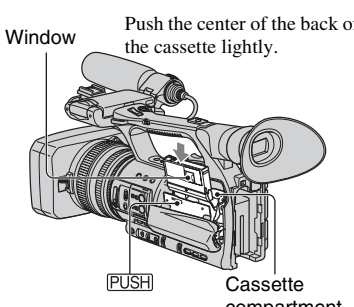
See page 116 for details on tapes including which tapes can be used and how to protect from overwriting tapes.

1 Slide and hold the ⌟ OPEN/EJECT lever in the direction of the arrow and open the lid.



The cassette compartment automatically comes out.

2 Insert a cassette with its window facing outwards, then press PUSH.



The cassette compartment automatically slides back in.

Notes

- Do not push the portion marked DO NOT PUSH while the cassette compartment is sliding in. Doing so may cause a malfunction.

3 Close the lid.

Tips

- The recordable time varies depending on [DV REC MODE] (p. 84). DVCAM DV

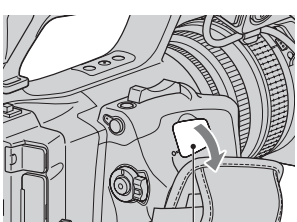
To eject the cassette

Open the lid following the same procedure as described in step **1** and remove the cassette.

“Memory Stick Duo”

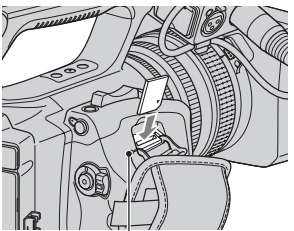
You can use only a “Memory Stick Duo” marked with MEMORY STICK DUO, MEMORY STICK PRO DUO or MEMORY STICK PRO-HG DUO (p. 119).

1 Open the “Memory Stick Duo” slot cover in the direction of the arrow.



“Memory Stick Duo” slot cover

2 Insert the “Memory Stick Duo” into the “Memory Stick Duo” slot in the right direction until it clicks.



Notes

- If you insert the “Memory Stick Duo” into the slot in the wrong direction, the “Memory Stick Duo,” the “Memory Stick Duo” slot, or image data may be damaged.

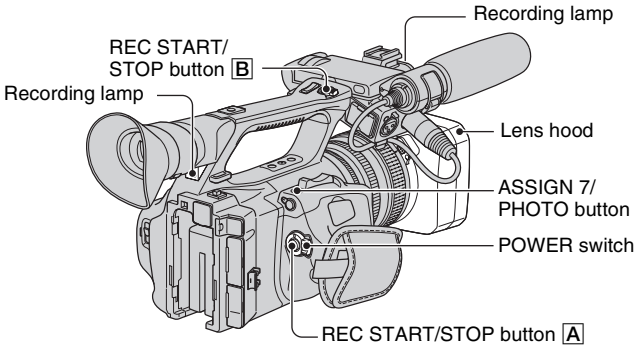
To eject a “Memory Stick Duo”

Lightly push the “Memory Stick Duo” once.

Notes

- When the access lamp is lit or flashing, your camcorder is reading/writing data. Do not shake or knock your camcorder, turn the power off, eject the “Memory Stick Duo,” or remove the battery pack. Otherwise, image data may be damaged.
- When inserting or ejecting the “Memory Stick Duo,” be careful with the “Memory Stick Duo” from popping out and dropping.

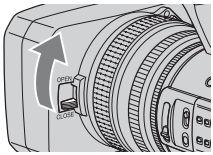
Recording



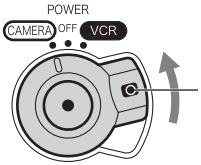
Your camcorder records movies on tape and still images on "Memory Stick Duo." Do the following steps to record movies.

- This camcorder can record movies in HDV or DVCAM (DV) format. The factory setting is HDV format ([REC FORMAT], p. 83).

1 Open the shutter of the lens hood.

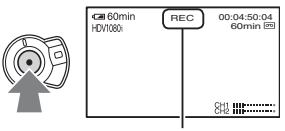


2 Slide the POWER switch to CAMERA while pressing the green button.



Press and hold the green button when you slide the POWER switch from OFF.

3 Press the REC START/STOP button A (or B).



[STBY] → [REC]

The recording lamp lights up during recording.
To stop the movie recording, press the REC START/STOP button again.

Tips

- When recording in HDV format, the aspect ratio is fixed to 16:9. When recording in DVCAM (DV) format, you can switch the aspect ratio to 4:3 ([DV WIDE REC], p. 84).
- You can change the screen display during recording (p. 52).
- Indicators displayed on the screen during recording are shown on page 136.
- The recording lamp can be set to stay off ([REC LAMP[F]], [REC LAMP[R]], p. 92).
- You cannot record movies on a “Memory Stick Duo.”
- For low angle recording, the REC START/STOP button on the handle is convenient. Release the HOLD lever to enable the REC START/STOP button. It might be helpful if you set the LCD panel face up or close it after turning it face down, or lift the viewfinder up during the low angle recording.

To capture still images

① Assign [PHOTO] to the ASSIGN 7/PHOTO button (p. 44).

② Press the ASSIGN 7/PHOTO button or the PHOTO button on the Remote Commander.
A still image will be recorded on the "Memory Stick Duo." ||||||| disappears when the recording is completed.

You can capture still images during movie recording.

Tips

- See page 138 for indicators that appear on the screen during recording.
- You can assign [PHOTO] to another ASSIGN button from (OTHERS) → [ASSIGN BTN] and use that ASSIGN button as a PHOTO button.

Capacity of the "Memory Stick Duo" (MB) and the number of recordable pictures

	1.2M 1440 × 810 (1.2M)	0.9M 1080 × 810 (0.9M)	VGA 640 × 480 (VGA)	0.2M 640 × 360 (0.2M)
512MB	770	1000	2900	3650
1GB	1550	2100	6000	7500
2GB	3150	4300	12000	15000
4GB	6300	8500	23500	29500
8GB	12500	17000	48000	60000
16GB	25500	34500	97500	122000

Notes

- Specifications are for Sony "Memory Stick Duo." The actual number of recordable pictures can vary depending on the recording environment and the type of "Memory Stick Duo."
- You cannot store a still image under the following conditions:
  - When the shutter speed is slower than 1/50.
  - While using the fader
  - While using [SMTH SLW REC]
  - While using shot transition
- The unique pixel array of Sony's ClearVid CMOS sensor and image processing system (Enhanced Imaging Processor) allows for still image resolution equivalent to the sizes described.

Tips

- Image sizes of still images are as follows:
  - Recording in HDV format/DVCAM (DV) format (16:9): 1.2M
  - Recording in DVCAM (DV) format (4:3): 0.9M
  - Playing back in HDV format: 1.2M
  - Playing back in DVCAM (DV) format (16:9): 0.2M
  - Playing back in DVCAM (DV) format (4:3): VGA

To store still images captured from movies on a tape on "Memory Stick Duo"

You can capture an image in a movie and record it on a "Memory Stick Duo" as a still image. Be sure to insert a recorded tape and a "Memory Stick Duo" in your camcorder.

① Assign [PHOTO] to the ASSIGN 7/PHOTO button (p. 44).

② Set the POWER switch to VCR.

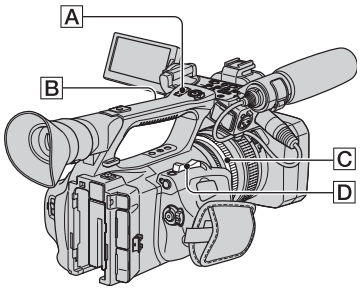
③ Press the ► (play) button to search for the scene you want to save as a still image. Press the ASSIGN 7/PHOTO button or the PHOTO button on your Remote Commander at the scene.

Notes

- The recorded date and time on the tape and the stored date and time on the "Memory Stick Duo" are both saved on the "Memory Stick Duo." When you view the still images, only the recorded date and time on the tape will be displayed on the screen (Data code, p. 52).
- Camera data stored on the tape will not be copied to the "Memory Stick Duo."
- You cannot store a still image during using your camcorder with [PB ZOOM] set to [ON] (p. 91).

Changing the settings of your camcorder recordings

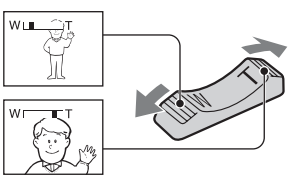
Adjusting the zoom



Using the zoom lever

Move the power zoom lever D slightly for a slower zoom. Move it further for a faster zoom.

Wide view: (Wide angle)



Close view: (Telephoto)

Tips

- The minimum distance required between your camcorder and the subject for focus is about 1 cm (about 13/32 in.) for wide angle and about 80 cm (about 2 5/8 feet) for telephoto.
- The focus may not be adjusted at certain zoom positions if the subject is within 80 cm (about 2 5/8 feet) from your camcorder.
- When you set [FOCUS MACRO] to [OFF], you cannot focus on a subject within 80 cm (about 2 5/8 feet) regardless of the zoom position (p. 71).
- Be sure to keep your finger on the power zoom lever D. If you move your finger off the power zoom lever D, the operation sound of the power zoom lever D may also be recorded.
- You can increase the zoom speed of the zoom lever D or the handle zoom A ([SPEED ZOOM], p. 71).

Using the handle zoom

① Set the handle zoom switch B to VAR or FIX.

Tips

- When you set the handle zoom switch B to VAR, you can zoom in or out at variable speed.
- When you set the handle zoom switch B to FIX, you can zoom in or out at fixed speed set in [HANDLE ZOOM] (p. 71).

② Press the handle zoom lever A to zoom in or out.

Notes

- You cannot use the handle zoom lever A when the handle zoom switch B is set to OFF.
- You cannot change the zoom speed of the zoom lever D with the handle zoom switch B.

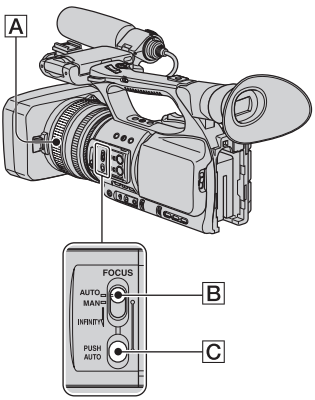
Using the zoom ring

You can zoom at the desired speed by turning the zoom ring C. Fine adjustment is also possible.

Notes

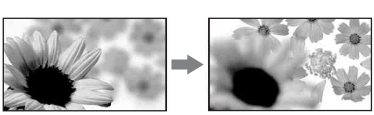
- Turn the zoom ring C at a moderate speed. If you turn it too fast, the zoom speed may lag behind the zoom ring rotation speed, or the operation sound of the zoom may also be recorded.

Adjusting the focus manually



You can adjust the focus manually for different recording conditions.
Use this function in the following cases.

– To record a subject behind a window covered with raindrops.
– To record horizontal stripes.
– To record a subject with little contrast between the subject and its background.
– When you want to focus on a subject in the background.



– To record a stationary subject using a tripod.

1 During recording or standby, set the FOCUS switch B to MAN.

☞ appears.

2 Rotate the focus ring A and adjust the focus.

☞ changes to ▲ when the focus cannot be adjusted any farther. ☞ changes to 👤 when the focus cannot be adjusted any closer.

Tips

For focusing manually

- It is easier to focus on the subject when you use the zoom function. Move the power zoom lever towards T (telephoto) to adjust the focus, and then, towards W (wide angle) to adjust the zoom for recording.
- When you want to record a close-up image of a subject, move the power zoom lever towards W (wide angle) to fully magnify the image, then adjust the focus.

To restore automatic adjustment

Set the FOCUS switch B to AUTO. ☞ disappears and the automatic focus adjustment is restored.

Using automatic focus temporarily (Push auto focus)

Record the subject while pressing and holding the PUSH AUTO button C.
If you release the button, the setting returns to manual focusing.
Use this function to shift the focus on one subject to another. The scenes will shift smoothly.

Tips

- The focal distance information (for when it is dark and hard to adjust the focus) appears for about 3 seconds in the following cases. (It will not be displayed correctly if you are using a conversion lens (optional)).
  – When you set the FOCUS switch to MAN and ☞ appears on the screen
  – When you rotate the focus ring while ☞ is displayed on the screen.

Using the expanded focus (Expanded focus)

Assign [EXP.FOCUS] to any one of the ASSIGN buttons beforehand (p. 44). During standby, press the ASSIGN button to which [EXP.FOCUS] is assigned. [EXPANDED FOCUS] appears and the center of the screen is magnified by about 2.0 times. It will be easier to confirm the focus setting during manual focusing. The screen returns to the original size when you press the button again.

Notes

- The screen returns to the original size when you start recording during the expanded focus display.

Tips

- You can select a type of an expanded image displayed during the expanded focus ([EXP.FOCUS TYPE], p. 80).

Focusing on a distant subject (Focus infinity)

Slide the FOCUS switch B to INFINITY and hold it there.

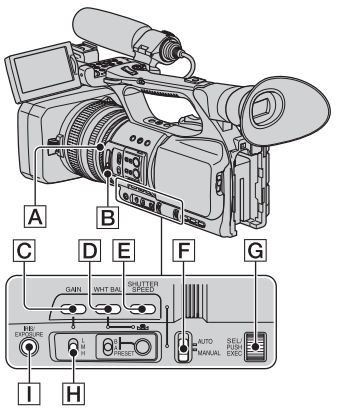
▲ appears on the screen.

To return to manual focus mode, release the FOCUS switch B. This function enables you to set focus on a distant subject even when the focus is automatically set on a close subject.

Notes

- This function is only available during the manual focus. It is not available during the automatic focus.

Adjusting the image brightness



You can adjust the image brightness by adjusting the iris, gain or shutter speed, or by reducing the light volume with the ND filter B. Also, when [EXPOSURE] is assigned to the iris ring A, you can adjust the iris, gain and shutter speed with the iris ring A. You can assign [IRIS] or [EXPOSURE] to the iris ring A from [IRIS/EXPOSURE] of the (CAMERA SET) menu (p. 67). The default setting is [IRIS].

Notes

- You cannot use the back light function and the spotlight function if at least two of iris, gain and shutter speed are adjusted manually.
- [AE SHIFT] is not effective while you adjust the iris, gain and shutter speed all manually.

Adjusting the iris

You can manually adjust the iris to control the volume of the light entering the lens. By adjusting the iris, you can change or close the aperture of the lens, which is expressed as an F value between F1.6 and F11. The volume of the light increases the more that you open the aperture (decreasing F value).

The volume of the light decreases the more that you close the aperture (increasing F value). The current F value appears on the screen.

① Select (CAMERA SET) menu → [IRIS/EXPOSURE] → [RING ASSIGN] → [IRIS] (p. 67).

② During recording or standby, set the AUTO/MANUAL switch F to MANUAL.

③ When the iris is automatically adjusted, press the IRIS/EXPOSURE button I. A next to the iris value disappears (p. 80), or the iris value appears on the screen.

④ Adjust the iris with the iris ring A. When you assign [PUSH AT IRIS] to one of the ASSIGN buttons, you can automatically adjust the iris while pressing and holding that ASSIGN button. See page 44 for details on the ASSIGN button.

Tips

- The F value becomes close to F3.4 as the zoom position changes from W to T even when you open the aperture by setting the F value lower than F3.4, such as F1.6.
- The range of focus, an important effect of the aperture, is called the depth of field. The depth of field gets shallower as the aperture is opened, and deeper as the aperture is closed. Use the aperture creatively to obtain the desired effect in your photography.
- This is handy for making the background blurred or sharp.

To adjust the iris automatically

Press the IRIS/EXPOSURE button I, or set the AUTO/MANUAL switch F to AUTO.
The iris value disappears, or A appears next to the iris value.

Notes

- When you set the AUTO/MANUAL switch F to AUTO, other manually adjusted items (gain, shutter speed, white balance) also become automatic.

Adjusting the exposure

When [IRIS/EXPOSURE] is set to [EXPOSURE], you can adjust the image brightness by adjusting the iris, gain and shutter speed with the iris ring.
You can also manually preset one or two of these parameters and adjust the remaining parameter(s) with the iris ring.

① Select (CAMERA SET) menu → [IRIS/EXPOSURE] → [RING ASSIGN] → [EXPOSURE] (p. 67)

② During recording or standby, set the AUTO/MANUAL switch F to MANUAL.

③ When [EXPOSURE] is automatically adjusted, press the IRIS/EXPOSURE button I.
The iris, gain and shutter speed values and E appear on the screen. You can adjust the iris, gain and shutter speed with the iris ring A.
When E is not displayed, do the following operation. E appears next to the items, indicating that you can adjust them with the iris ring A.

– Gain
Press the GAIN button C.

– Shutter speed
Press the SHUTTER SPEED button E twice. When the shutter speed is not locked, press the button once.

④ Adjust the image brightness by turning the iris ring A.
When you assign [PUSH AT IRIS] to one of the ASSIGN buttons, you can automatically adjust the exposure while pressing and holding that ASSIGN button. See page 44 for details on the ASSIGN button.

To restore automatic adjustment

Press the IRIS/EXPOSURE button I, or set the AUTO/MANUAL switch F to AUTO.
The values next to which E is displayed disappear, or A appears next to those values.

Notes

- When you set the AUTO/MANUAL switch F to AUTO, other manually adjusted items (gain, shutter speed, white balance) also become automatic.

Tips

- When you press the GAIN button C while E is displayed on the screen next to the gain value, E disappears and you can adjust the gain manually. When you press the GAIN button C again, E appears and you can adjust the gain with the iris ring A. See step ② in "Adjusting the gain" for details on how to adjust the gain.
- When you press the SHUTTER SPEED button E while E is displayed on the screen next to the shutter speed value, E disappears and you can adjust the shutter speed manually. When you press the SHUTTER SPEED button E again, E appears and you can adjust the shutter speed with the iris ring A. See steps ③ and ④ in "Adjusting the shutter speed" on page 30 for details on how to adjust the shutter speed.

Adjusting the gain

You can adjust the gain manually when you do not want to use the AGC (automatic gain control).

① Set the AUTO/MANUAL switch F to MANUAL during recording or standby.

② When the gain is automatically adjusted, press the GAIN button C. A next to the gain value disappears, or the gain value appears on the screen.

③ Set the gain switch H to H, M or L.
The gain value set for the selected gain switch position appears on the screen. You can set the gain value for each gain switch position from [GAIN SETUP] of the (CAMERA SET) menu (p. 67).

To adjust the gain automatically

Press the GAIN button C, or set the AUTO/MANUAL switch F to AUTO. The gain value disappears, or A appears next to the gain value.

Notes

- When you set AUTO/MANUAL switch F to AUTO, other manually adjusted items (iris, shutter speed, white balance) also become automatic.

Tips

- When you record a movie with the gain set to [-6dB] and play it back with the data code, the gain value is displayed as [---].

Adjusting the shutter speed

You can manually adjust and fix the shutter speed. You can make a moving subject look still or emphasize the movement of a moving subject by adjusting the shutter speed.

① During recording or standby, set AUTO/MANUAL switch F to MANUAL.

② Press the SHUTTER SPEED button E until the shutter speed value is highlighted.

③ Change the shutter speed displayed on the screen by turning the SEL/PUSH EXEC dial G.
You can adjust the shutter speed in a range of 1/3 second through 1/10000 second or the extended clear scan (ECS).
The denominator of the set shutter speed appears on the screen. For example, [100] appears on the screen when you set the shutter speed to 1/100 second. The larger the value on the screen, the faster the shutter speed.

④ Press the SEL/PUSH EXEC dial G to lock the shutter speed.
To readjust the shutter speed, do steps ② to ④.

Tips

- It is difficult to focus automatically at a lower shutter speed. Manual focusing with your camcorder attached to a tripod is recommended.
- The picture may flicker or change colors under fluorescent lamps, sodium lamps, or mercury lamps. You can reduce flickering by setting the shutter speed to an appropriate frequency in the extended clear scan (ECS) range ([ECS FREQ.], p. 69).
- When recording a subject such as a monitor screen, set the shutter speed in the extended clear scan (ECS) range in order to obtain images with no horizontal bands of noise. You can set the shutter speed for the extended clear scan from [ECS FREQ.] in the (CAMERA SET) menu (p. 69).

To adjust the shutter speed automatically

Press the SHUTTER SPEED button E twice, or set the AUTO/MANUAL switch F to AUTO.
The shutter speed value disappears, or A appears next to the shutter speed value.

Notes

- When you set the AUTO/MANUAL switch F to AUTO, other manually adjusted items (iris, gain, white balance) also become automatic.

Adjusting the volume of light (ND filter)

You can record the subject clearly by using the ND filter B when the recording environment is too bright.
The ND filters 1, 2 and 3 reduce the volume of light to about 1/4, 1/16 and 1/64, respectively.

If ND 1/4 flashes during the iris automatic adjustment, set the ND filter to 1. If ND 1/16 flashes during the iris automatic adjustment, set the ND filter to 2. If ND 1/64 flashes during the iris automatic adjustment, set the ND filter to 3.
The ND filter indicator will stop flashing and remain on the screen.

If ND OFF CLR flashes, set the ND filter to OFF. ND OFF CLR will disappear from the screen.

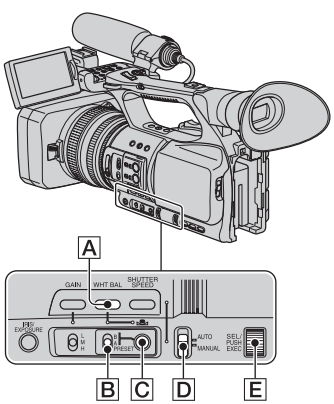
Notes

- If you change the ND filters B during recording, the movie and sound may be distorted.
- When adjusting the iris manually, the ND icon does not flash even if the light volume should be adjusted with the ND filter.

Tips

- While recording a bright subject, diffraction may occur if you close the aperture further down, resulting in a fuzzy focus (this is a common phenomenon with video cameras). The ND filter B suppresses this phenomenon and gives better recording results.

Adjusting to natural color (White balance)



You can adjust and fix the white balance according to the lighting conditions of recording environment.
You can store white balance values in memory A (A) and memory B (B), respectively. Unless a white balance is readjusted, values will remain even after the power has been turned off.
When you select PRESET, [OUTDOOR], [INDOOR] or [MANU WB TEMP] is

selected, according to which one you previously set with [WB PRESET] in the (CAMERA SET) menu.

1 During recording or standby, set the AUTO/MANUAL switch D to MANUAL.

2 Press the WHT BAL button A.

3 Set the white balance memory switch B to any one of PRESET/A/B.

Select A or B for recording with the white balance setting stored in memory A or B.

Indicator	Shooting conditions
A (Memory A) B (Memory B)	• White balance values adjusted for light sources can be stored in memory A and memory B. Follow the steps in "To save the adjusted white balance value in memory A or B" (p. 32).
Outdoor ([OUTDOOR])	• Recording neon signs or fireworks • Recording sunset/ sunrise, just after sunset or just before sunrise • Under daylight color fluorescent lamps
Indoor ([INDOOR])	• Under the lighting conditions that change in many ways, such as a party hall • Under strong light such as in a photography studio • Under sodium lamps or mercury lamps
Color temperature ([MANU WB TEMP])	• Color temperature can be set between 2300K and 15000K (the default setting is 6500K).

Tips

- You can change the outdoor white balance setting by setting offset. Press (one push) button C while (outdoor) is selected and turn the SEL/PUSH EXEC dial E to select an offset value from -7 (bluish) to 0 (normal, the default setting) to +7 (reddish). You can also set the white balance offset value from the menu ([WB OUTDR LVL], p. 68).
- You can change the color temperature. Set [WB PRESET] to [MANU WB TEMP] and the white balance memory switch B to PRESET, then press the (one push) button C. Turn the SEL/PUSH EXEC dial E until the desired temperature appears on the screen, then press the dial to set the temperature. You can also set the color temperature from the menu ([WB TEMP SET], p. 68).

To save the adjusted white balance value in memory A or B

① Set the white balance memory switch to A (A) or B (B) in step **3** of "Adjusting to natural color (White balance)."

② Capture a white subject, such as white paper, full-screen in the same lighting condition as the one in which the subject is.

③ Press (one push) button C. A or B starts flashing rapidly. It will stay on when the white balance adjustment is completed and the adjusted value is stored in A or B.

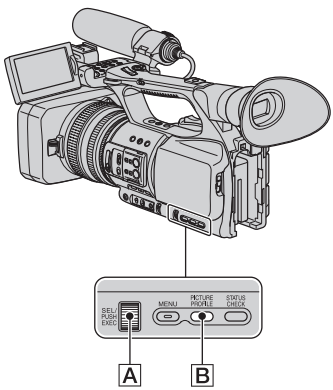
To adjust the white balance automatically

Press the WHT BAL button A or set the AUTO/MANUAL switch D to AUTO.

Notes

- When you set the AUTO/MANUAL switch D to AUTO, other manual adjustments (iris, gain, and shutter speed) also become automatic.

Customizing the picture quality (Picture profile)



You can customize the picture quality by adjusting picture profile items such as [GAMMA] and [DETAIL].
Connect your camcorder to a TV or monitor, and adjust the picture quality while observing the picture on the TV or monitor screen.
Picture quality settings for different recording conditions are stored in [PP1] through [PP6] as default settings.

Notes

- When you set [x.v.Color] of the (CAMERA SET) menu to [ON], the picture profile will be disabled.

Picture profile number (setting name)	Recording condition
PP1 :USER	Default settings the same as when Picture Profile is [OFF]
PP2 :USER	Default settings the same as when Picture Profile is [OFF]
PP3 :PRO COLOR	Example settings of pictures recorded by a professional shoulder camcorder with ITU709 gamma
PP4 :PD COLOR	Example settings of pictures recorded by a professional handy camcorder with PD gamma
PP5 :FILM LOOK1	Example settings of pictures recorded on cinema color negative film
PP6 :FILM LOOK2	Example settings of pictures screened with cinema color print film

1 During standby, press the PICTURE PROFILE button B.

2 Select a picture profile number with the SEL/PUSH EXEC dial A.

You can record with the settings of the selected picture profile.

3 Select [OK] with the SEL/PUSH EXEC dial A.

To cancel the picture profile recording

Select [OFF] in step **2** with the SEL/PUSH EXEC dial A.

To change the picture profile

You can change the settings stored in [PP1] through [PP6].

① Press the PICTURE PROFILE button B.

② Select the PICTURE PROFILE number with the SEL/PUSH EXEC dial A.

③ Select [SETTING] with the SEL/PUSH EXEC dial A.

④ Select an item to be adjusted with the SEL/PUSH EXEC dial A.

⑤ Adjust the picture quality with the SEL/PUSH EXEC dial A.

⑥ Repeat steps ④ and ⑤ to adjust other items.

⑦ Select [↩ RETURN] with the SEL/PUSH EXEC dial A.

⑧ Select [OK] with the SEL/PUSH EXEC dial A.
A picture profile indicator appears.

Tips

- You can assign picture profiles to the ASSIGN buttons and use them to turn the picture profiles on and off (p. 44).

BLACK LEVEL

To set the black level.

Item	Description and settings
[MASTER BLACK]	Sets the master black level. -15 to +15
[BLACK R]	Sets the black level of Rch. [MASTER BLACK] + [BLACK R] is the black level of Rch. -15 to +15
[BLACK G]	Sets the black level of Gch. [MASTER BLACK] + [BLACK G] is the black level of Gch. -15 to +15
[BLACK B]	Sets the black level of Bch. [MASTER BLACK] + [BLACK B] is the black level of Bch. -15 to +15

GAMMA

To select a gamma curve.

Item	Description and settings
[STANDARD]	Standard gamma curve
[CINEMATONE1]	Gamma curve 1 for producing tone of film camera images
[CINEMATONE2]	Gamma curve 2 for producing tone of film camera images
[ITU709]	Gamma curve that corresponds to ITU-709. Gain in low intensity area: 4.5
[G5.0]	Gamma curve with 5.0 of a low intensity area gain
[PD]	Gamma curve for producing tone similar to DCR-PD series
[x.v.]	Gamma curve similar to x.v.Color

BLACK GAMMA

To correct gamma in low intensity area.

Item	Description and settings
[RANGE]	Selects a correcting range. HIGH / MIDDLE / LOW
[LEVEL]	Sets the correcting level. -7 (maximum black compression) to +7 (maximum black stretch)

KNEE

To set knee point and slope for video signal compression to reduce over-highlighting by limiting signals in high contrast area of the subject to the dynamic range of your camcorder.

Item	Description and settings
[MODE]	Selects a mode either automatic or manual. [AUTO] : to set the knee point and slope automatically. [MANUAL] : to set the knee point and slope manually.
[AUTO SET]	Sets the maximum point and sensitivity in the automatic mode. [MAX POINT] : Sets the maximum point. 90% to 100% [SENSITIVITY] : Sets the sensitivity. HIGH/MIDDLE/LOW
[MANUAL SET]	Sets the knee point and slope manually. [POINT] : Sets the knee point. 75% to 105% [SLOPE] : Sets the knee slope. -5(gentle) to +5(steep)

COLOR MODE

To set type and level of colors.

Item	Description and settings
[TYPE]	Selects a type of colors. [STANDARD] : Standard colors [CINEMATONE1] : Film camera image-like colors good with [GAMMA] set to [CINEMATONE1] [CINEMATONE2] : Film camera image-like colors good with [GAMMA] set to [CINEMATONE2] [ITU709 MTX] : Colors corresponding to ITU-709
[LEVEL]	Sets a color level when you set [TYPE] to the settings other than [STANDARD]. 1 (close to color settings of [STANDARD]) to 8 (color settings of the selected type)

COLOR LEVEL

To set the color level.

Item	Description and settings
	-7 (light) to +7 (dark), -8: black and white

COLOR PHASE

To set the color phase.

Item	Description and settings
	-7 (greenish) to +7 (reddish)

COLOR DEPTH

To set the color depth for each color phase.
This function is more effective for chromatic colors and less effective for achromatic colors. The color looks deeper as you increase the setting value to more positive side, and lighter as you decrease the value to more negative side. This function is effective even if you set [COLOR LEVEL] to [-8] (monotone).

Item	Description and settings
[R]	-7 (light red) to +7 (deep red)
[G]	-7 (light green) to +7 (deep green)
[B]	-7 (light blue) to +7 (deep blue)
[C]	-7 (light cyan) to +7 (deep cyan)
[M]	-7 (light magenta) to +7 (deep magenta)
[Y]	-7 (light yellow) to +7 (deep yellow)

COLOR CORRCT

To set items for the color correction.

Item	Description and settings
[TYPE]	Selects color correction type. [OFF] : Not correct colors. [COLOR REVISN] : Corrects colors stored in memory. Colors not stored in memory (displayed in black and white when [COLOR EXTRCT] is set) will not be corrected. [COLOR EXTRCT] : Displays areas in colors that are stored in the memory. The other areas are displayed in black and white. You can use this function to add effects on your movies or to confirm the colors to be stored in the memory.
[MEMORY SEL]	Selects a memory to be effective. [1]: Sets Memory 1 to be effective. [2]: Sets Memory 2 to be effective. [1&2]: Sets both Memory 1 and 2 to be effective.

COLOR CORRCT (Continued)

Item	Description and settings
[MEM1 COLOR]	Sets colors stored in Memory 1. [PHASE] : Sets color phase. 0 (purple) → 8 (red) → 16 (yellow) → 24 (green) → 31 (blue) [RANGE] : Sets color phase range. 0 (no color selection), 1 (narrow: to select only a single color) to 31 (wide: to select multiple colors in similar color phase) [SATURATION] : Sets saturation. 0 (to select from light colors to dark colors) to 31 (to select dark color) [ONE PUSH SET]: Automatically sets [PHASE] for a subject at the center of the marker. [SATURATION] is set to 0.
[MEM1 REVISN]	Corrects colors in Memory 1. [R GAIN] : Corrects the redness of the color in Memory 1. Tone of cyan becomes higher as the redness decreases. -15 (less reddish) to +15 (more reddish) 0 for no correction [B GAIN] : Corrects the blueness of the color in Memory 1. Tone of yellow becomes higher as the blueness decreases. -15 (less bluish) to +15 (more bluish) 0 for no correction
[MEM2 COLOR]	Sets colors stored in Memory 2. See [MEM1 COLOR] for description and settings.
[MEM2 REVISN]	Corrects colors in Memory 2. See [MEM1 REVISN] for description and settings.

Tips

- Setting both memories to the same setting doubles the color correction effect.
- The settings of [COLOR CORRCT] will be retained even if the power is turned off. However, if you want to correct colors that may change according to time of the day, weather, location, etc., it is recommended that you set [COLOR CORRCT] again prior to recording.
- If you change the white balance value or the settings of [WB SHIFT], [COLOR LEVEL] or [COLOR PHASE] of the picture profile, the settings of [RANGE] and [PHASE] of the selected memory will change. When you change the white balance value or the settings of the above picture profile items after you have set [RANGE] and [PHASE], check the settings of [COLOR CORRCT] prior to recording.
- During the automatic white balance adjustment, the white balance value automatically varies according to the lighting conditions of your recording environment. The manual white balance adjustment is recommended when you use [COLOR CORRCT].

WB SHIFT

To set items for the white balance shift.

Item	Description and settings
[FILTER TYPE]	Selects a color filter type for the white balance shift. [LB-CC] : Film type (color conversion and correction) [R-B] : Video type (correction of R and B levels)
[LB[COL TEMP]]	Sets a color temperature offset value. -9 (bluish) to +9 (reddish)
[CC[MG/GR]]	Sets a color correct offset value. -9 (greenish) to +9 (magentish)
[R GAIN]	Sets an R level. -9 (low R level) to +9 (high R level)
[B GAIN]	Sets a B level. -9 (low B level) to +9 (high B level)

DETAIL

To set items for the detail.

Item	Description and settings
[LEVEL]	Sets the detail level. -7 to +7
[MANUAL SET]	[ON/OFF] : Turns on and off the manual detail adjustment. [ON] : Enables the manual detail adjustment (automatic optimization will not be performed). [OFF] : Disables the manual detail adjustment. [V/H BALANCE] : Sets the horizontal (H) and vertical (V) balance of detail. [B/W BALANCE]: Selects the balance of the upper DETAIL (P) and the lower DETAIL (N). TYPE 1 (off to the lower DETAIL (N) side) to TYPE 5 (off to the upper DETAIL (P) side) [BLACK LIMIT] : Sets the limit level of the lower DETAIL (N). 0 (Low limit level: likely to be limited) to 7 (High limit level: not likely to be limited) [WHITE LIMIT] : Sets the limit level of the upper DETAIL (P). 0 (Low limit level: likely to be limited) to 7 (High limit level: not likely to be limited) [CRISPENING] : Sets the crispening level. 0 (shallow crispening level) to 7 (deep crispening level) [HI-LIGHT DTL] : Sets the DETAIL level in the high intensity areas. -2 to +2

SKINTONE DTL

To adjust the detail of skintone areas to reduce wrinkles.

Item	Description and settings
[ON/OFF]	Suppresses details in skin-tone areas to reduce wrinkles. Select [ON] when you want to use this function. You can also select other areas.
[LEVEL]	Sets the adjustment level. 1 (less adjust the detail) to 8 (more adjust the detail)
[COLOR SEL]	Sets color items for the detail adjustment. [PHASE] : Sets the color phase. 0 (purple) → 32 (red) → 64 (yellow) → 96 (green) → 127 (blue) [RANGE] : Sets the color range. 0 (selects no color), 1 (narrow: selects a single color) to 31 (wide: selects multiple colors in similar color phases and saturation) The detail will not be adjusted when you set [RANGE] to 0. [SATURATION] : Sets the color saturation. 0 (selects a light color) to 31 (selects a deep color) [REVERSE] : Reverses the selected color range. If you execute this function when a color has been selected, colors that were not selected will be selected instead. [Y LEVEL] : Sets the color brightness. 0 (selects a dark color) to 31 (selects a bright color) [Y RANGE] : Sets the color brightness range. 1 (narrows the brightness range) to 32 (expands the brightness range) [ONE PUSH SET]: Automatically adjusts [PHASE], [SATURATION] and [Y LEVEL] for a subject at the center of the marker. [RANGE] and [Y RANGE] will not be changed.

PROFILE NAME

To name the picture profiles set in [PP1] through [PP6] (p. 41).

COPY

To copy the settings of the picture profile to another picture profile number.

RESET

To reset the picture profile to the default setting.

To name the picture profile settings

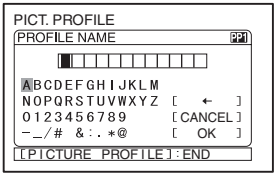
You can name picture profile1 through 6.

① Press the PICTURE PROFILE button B.

② Select the picture profile that you want to name with the SEL/PUSH EXEC dial A.

③ Select [SETTING] → [PROFILE NAME] with the SEL/PUSH EXEC dial A.

④ Select a letter with the SEL/PUSH EXEC dial A. Repeat this operation until a complete name is entered.



Tips

- Each name can be up to 12 characters long. Characters that can be used in profile names:
  - A to Z
  - 0 to 9
  - - _ / # & : . * @

⑤ Select [OK] with the SEL/PUSH EXEC dial A.
The profile name is changed.

⑥ Select [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

To copy the picture profile setting to other picture profiles

① Press the PICTURE PROFILE button B.

② Select the picture profile that you want to copy from with the SEL/PUSH EXEC dial A.

③ Select [SETTING] → [COPY] with SEL/PUSH EXEC dial A.

④ Select the number of the picture profile that you want to copy to with the SEL/PUSH EXEC dial A.

⑤ Select [YES] with the SEL/PUSH EXEC dial A.

⑥ Select [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

To reset the picture profile settings

You can reset the picture profile settings by each picture profile number. You cannot reset all picture profile settings at once.

① Press the PICTURE PROFILE button B.

② Select the number of the picture profile that you want to reset with the SEL/PUSH EXEC dial A.

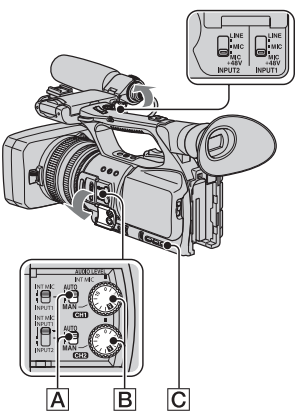
③ Select [SETTING] → [RESET] → [YES] → [RETURN] → [OK] with the SEL/PUSH EXEC dial A.

Adjusting the volume

You can adjust the volume of an internal microphone or a microphone connected to the INPUT1/INPUT2 jack.

Tips

- See page 9 for details on attaching the supplied microphone, and on the CH1 (INT MIC/INPUT1) and the CH2 (INT MIC/INPUT1/INPUT2) switches.



1 Set the AUTO/MAN (CH1/CH2) switch A of the channel to be adjusted to MAN.

♪M appears on the screen.

2 Turn the AUDIO LEVEL dial B to adjust the volume during recording or standby.

To restore automatic adjustment

Set the AUTO/MAN (CH1/CH2) switch A of the manually adjusted channel to AUTO.

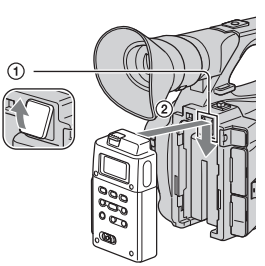
Tips

- To check other audio settings, press the STATUS CHECK button C.
- For other settings, see the (AUDIO SET) menu (p. 75).

Attaching a Memory Recording Unit

You can attach an optional Memory Recording Unit HVR-MRC1 to your camcorder for recording. To attach it to your camcorder, do the following. Refer to the Memory Recording Unit operating instructions for details on its operation.

Remove the Memory Recording Unit jack cover (①). Insert the terminal of the Memory Recording Unit in the Memory Recording Unit jack and slide the unit down (②).



To remove the Memory Recording Unit

Slide the Memory Recording Unit upward while pushing its RELEASE lever downward.

Notes

- You cannot use the HDV/DV jack when the Memory Recording Unit is attached to your camcorder.
- When you use the Memory Recording Unit, set appropriate items in [EXT REC CTRL] of the (IN/OUT REC) menu (p. 85).

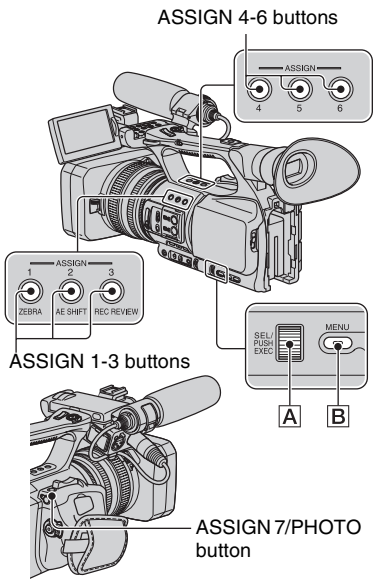
Assigning the functions to the ASSIGN buttons

Some functions need to be assigned to the ASSIGN buttons for use. You can assign a single function to any one of the ASSIGN 1 to 7 buttons.

Functions you can assign to the ASSIGN buttons

The buttons in parentheses indicate that the functions are assigned to the buttons by default.

- EXP.FOCUS (p. 28)
- FOCUS MACRO (p. 71)
- D.EXTENDER (p. 71)
- RING ROTATE (p. 67)
- HYPER GAIN (p. 68)
- AE SHIFT (p. 69) (ASSIGN 2 button)
- PUSH AT IRIS (p. 28)
- INDEX MARK (p. 45)
- STEADYSHOT (p. 70)
- BACK LIGHT (p. 70)
- SPOTLIGHT (p. 70)
- FADER (p. 71)
- SMTH SLW REC (p. 71)
- COLOR BAR (p. 74)
- LAST SCN RVW (p. 46)
- REC REVIEW (p. 46) (ASSIGN 3 button)
- END SEARCH (p. 46)
- ZEBRA (p. 78) (ASSIGN 1 button)
- MARKER (p. 79)
- PEAKING (p. 79)
- TC RESET (p. 86)
- TC COUNTUP (p. 86)
- PHOTO (p. 25) (ASSIGN 7 button)
- PICTURE PROFILE (p. 33)
- SHOT TRANSITION (p. 46)



1 **Press the MENU button B.**

2 **Select the (OTHERS) → [ASSIGN BTN] with the SEL/PUSH EXEC dial A.**

3 **Select the ASSIGN button to which you want to assign a function with the SEL/PUSH EXEC dial A.**

- [------] appears if no function is assigned to the ASSIGN button.
- Select [YES] when you select [SHOT TRANSITION], then do step **5**.

4 **Select the function that you want to assign with the SEL/PUSH EXEC dial A.**

5 **Select [OK] with the SEL/PUSH EXEC dial A.**

6 **Select [RETURN] with the SEL/PUSH EXEC dial A.**

7 **Press the MENU button B to hide the menu screen.**

Tips

- Shot transition is assigned to the ASSIGN 4, 5 and 6 buttons (p. 46). Cancel the shot transition assignment to return to the pre-setting assignment.
- To cancel the shot transition, select [SHOT TRANSITION] → [YES] in step **3**.

Recording an index signal

If you record a scene with an index signal, you can easily find that scene during playback (p. 54).
The index function will make it easier to check the transition of recording or edit your pictures using index signals.

1 **Assign [INDEX MARK] to one of the ASSIGN buttons (p. 44).**

2 **Press the ASSIGN button to which [INDEX MARK] is assigned.**

During recording

appears for about 7 seconds and an index signal is recorded.

During standby

flashes.

After you press the REC START/STOP button to start recording, appears for about 7 seconds and an index signal is recorded.

To cancel the operation

Press the ASSIGN button to which [INDEX MARK] is assigned again before you start recording.

Notes

- You cannot record an index signal on a recorded tape afterward.

Playing back the most recently recorded movies (Last scene review)

You can set your camcorder to automatically rewind the tape to the beginning of the most recently recorded scene, play back to the end of the scene, then stop the tape.

1 Assign [LAST SCN RVW] to an ASSIGN button (p. 44).

2 During standby, press the ASSIGN button to which [LAST SCN RVW] is assigned.

The last scene review starts.

Notes

- If the recording time of the movie is short, [LAST SCN RVW] may not work correctly.
- [LAST SCN RVW] does not work once you take out a tape.

Tips

- If you press the ASSIGN button again during the last scene review, your camcorder plays back the last 5 seconds of the most recently recorded movie, then goes standby at the end of the recording.

Reviewing the most recently recorded scenes (Rec review)

You can view about 2 seconds of the scene recorded just before you stopped the tape. This is convenient during playback of the latest scene check.

Press the REC REVIEW button or the ASSIGN button to which [REC REVIEW] is assigned during standby.

The last 2 seconds (approx.) of the most recently recorded scenes will be played back, then your camcorder returns to standby.

Searching for the last scene of the most recent recording (End search)

1 Assign [END SEARCH] to one of the ASSIGN buttons (p. 44).

2 Press the ASSIGN button to which [END SEARCH] is assigned.

The last scene of the most recent recording will be played back for about 5 seconds, and the camcorder goes standby at the point where the last recording has finished.

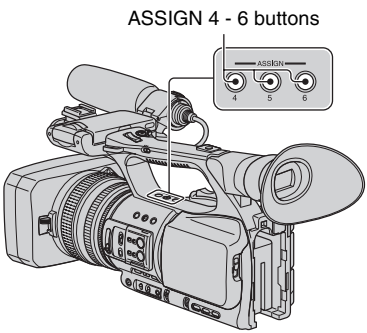
Notes

- End search will not work once you eject the tape.
- End search will not work correctly if a blank section exists between recorded sections on the tape.

Using the Shot transition

You can store settings of focus, zoom, iris, gain, shutter speed and white balance, and smoothly shift from the current settings to the stored settings (shot transition).
For example, you can shift the focus from closer objects to farther objects, or change the depth of field by adjusting the iris. You can also develop scenes under different

conditions smoothly. If you store manually adjusted settings of white balance, you can smoothly shift from one scene to another under different conditions, such as from indoor to outdoor.
Sony recommends that you use a tripod to avoid image blurring.
You can set the items, such as transition curve and transition time, in [SHOT TRANSITION] of the (CAMERA SET) menu (p. 73).



1 Assign [SHOT TRANSITION] to the ASSIGN buttons (p. 44).

Tips

- Shot transition is assigned to ASSIGN 4, 5 and 6 buttons.

2 Store the settings (shot).

① Press the ASSIGN 4 button repeatedly to bring up the SHOT TRANSITION STORE screen.
② Manually adjust the settings.
See pages 26 to 41 for details on how to adjust the settings manually.
③ Press the ASSIGN 5 button for storing the settings in SHOT-A, or the ASSIGN 6 button for storing the settings in SHOT-B.

Notes

- The settings stored in SHOT-A or SHOT-B will be erased when you set the POWER switch to OFF.

3 Check the stored settings.

① Press the ASSIGN 4 button repeatedly to bring up the SHOT TRANSITION CHECK screen.
② Press the ASSIGN 5 button to check the SHOT-A. Press the ASSIGN 6 button to check the SHOT-B.
The image will be displayed with the settings stored in the selected SHOT. The focus, zoom, iris, gain, shutter speed and white balance are automatically adjusted to the stored settings.

Notes

- On the shot transition check screen, the settings do not shift to the stored settings of the transition time and curve set in [TRANS TIME] and [TRANS CURVE] (p. 73)

4 Execute the shot transition.

① Press the ASSIGN 4 button repeatedly to bring up the SHOT TRANSITION EXEC screen.
② Press the REC START/STOP button.
③ Press the ASSIGN 5 button for recording with SHOT-A, or the ASSIGN 6 button for recording with SHOT-B.
The settings shift from the current ones to the stored ones.

Tips

- Press the ASSIGN 4 button repeatedly to cancel the shot transition.

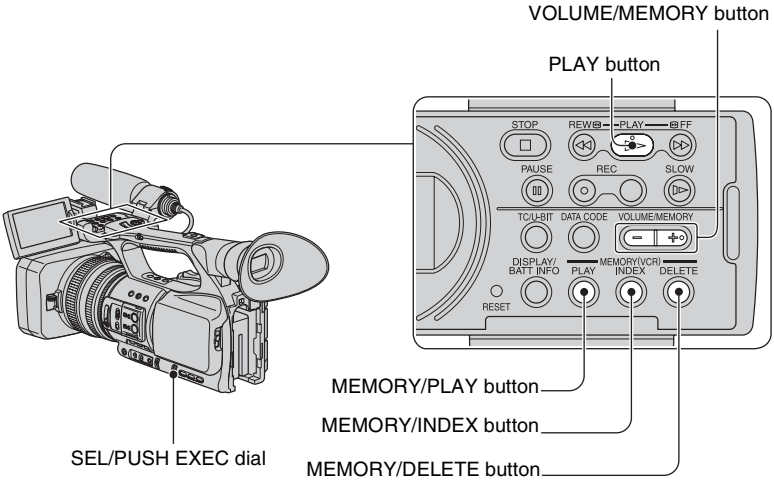
Notes

- When you change [SHOT TRANSITION] (p. 46), press the ASSIGN 4 button repeatedly to exit the shot transition screen.
- You cannot return from the stored SHOT-A or SHOT-B settings to previous settings after you execute the shot transition during recording.
- If you press the following buttons during the shot transition operation, the operation will be canceled:
  - PICTURE PROFILE button
  - MENU button
  - ASSIGN button to which [EXP.FOCUS] is assigned
  - STATUS CHECK button
  - ASSIGN button to which [SMTH SLW REC] is assigned
- You can also make a transition from the SHOT-A to the SHOT-B or from the SHOT-B to the SHOT-A. For example, to make a transition from the SHOT-A to the SHOT-B, display the shot transition check screen, press the ASSIGN 5 button to bring up the SHOT-A and press the REC START/STOP button. Then, display the shot transition execution screen and press the ASSIGN 6 button.
- You can rehearse the shot transition by pressing the respective buttons (ASSIGN 5 or ASSIGN 6) to which your customized settings are assigned before pressing the REC START/STOP button in step **4**.

To cancel the operation

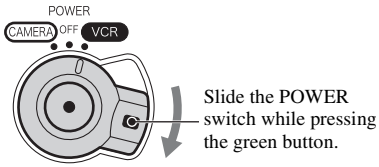
Press the ASSIGN 4 button repeatedly to exit the shot transition screen.

Playback



You can play back movies as follows:

1 Slide the POWER switch to VCR while pressing the green button.



2 Start playing back.

Press ◀◀ (rewind) to go to the point you want to view, then press ▶ (play) to start playback.

- ■ : STOP
- ❚❚ : PAUSE (Press ▶ or ❚❚ again to restart the playback)
- ◀◀ : REW ⏪ (Rewind, review)
- ▶▶ : ⏩ FF (Cue, fast forward)
- ❙▶ : SLOW

Notes

- Your camcorder automatically goes into a stopped state when it is in pause for more than 3 minutes.
- The screen may temporarily go blank losing images and sound when signals switch between HDV and DVCAM (DV) during playback of a tape in which HDV format and DVCAM (DV) format are mixed.

- You cannot play back movies recorded in HDV format on DVCAM (DV) format video cameras or mini DV players.
- You can play back a DV format tape on your camcorder only when its contents are recorded in the SP mode. You cannot play back movies recorded on the DV format tape in the LP mode.
- Time code and user bits will not be displayed correctly when you play back a tape with no time code or user bit data, or a tape with time code that your camcorder does not support.

Tips

- See page 138 for indicators displayed on the screen during playback.
- See page 53 for how to switch displays during playback.

To search for a scene while viewing a movie

Press and hold ◀◀/▶▶ during playback (Picture Search). To view during fast forward, press and hold ▶▶. To view during rewind, press and hold ◀◀ (Skip Scan).

To adjust the volume

Adjust the volume with the VOLUME/MEMORY button.

To view still images

① Set the POWER switch to VCR.

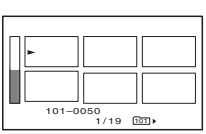
② Press the MEMORY/PLAY button.

③ Select still image that you want to view using the VOLUME/MEMORY button.
To stop viewing still images, press the MEMORY/PLAY button again.

To display the list of still images (index screen)

① Set the POWER switch to VCR.

② Press the MEMORY/INDEX button.



③ Select a still image using the VOLUME/MEMORY button.
To display a single image, move ▶ to that image and press the MEMORY/PLAY button.
To stop displaying the list of still images, press the MEMORY/INDEX button again.

To delete still images from the “Memory Stick Duo”

① Do the steps of “To view still images” to display still images that you want to delete.

② Press the MEMORY/DELETE button.

③ Select [YES] with the SEL/PUSH EXEC dial.
The still image will be deleted.

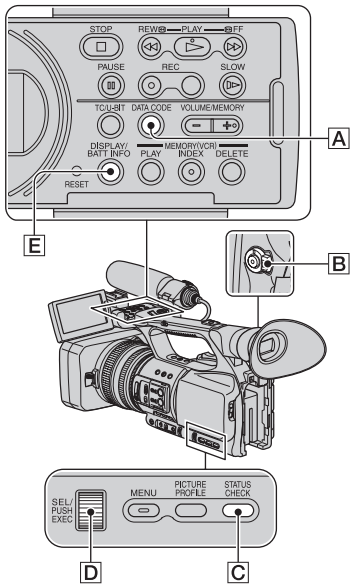
Notes

- Still images cannot be restored once you delete them.
- You cannot delete still images when the “Memory Stick Duo” is write-protected (p. 119) or the still image is protected (p. 104).

Tips

- To delete a still image in the index, move ▶ to the still image using the VOLUME/MEMORY button, then do steps ② and ③.
- To delete all still images, do [ALL ERASE] of the (MEMORY SET) menu (p. 88).

Changing/checking the settings in your camcorder



Changing the screen

You can turn on and off the display of the time code, tape counter, and other information on the screen.

Press the DISPLAY/BATT INFO button E.

The screen indicators turn on (displayed) and off (not displayed) as you press the button.
When the POWER switch is set to CAMERA, the screen changes (detailed display → simple display → no display) as you press the button.

Tips

- You can display the screen indicators during playback on a TV. Select [V-OUT/PANEL] or [ALL OUTPUT] of [DISP OUTPUT] (p. 82).

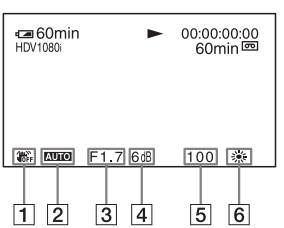
Displaying recording data (Data code)

You can display information, including date, time and camera data, automatically stored during recording on the screen during playback.

1 Set the POWER switch B to VCR.

2 Press the DATA CODE button A during playback or pause.

The screen changes (date and time display → camera data display → no display) as you press the button.



1 SteadyShot off

2 Exposure
AUTO appears during playback of the movie recorded with the iris, gain and shutter speed automatically adjusted.
MANUAL appears during playback of the movie recorded with the iris, gain and shutter speed manually adjusted.

3 Iris
CLOSE appears in the iris value display area during playback of the movie recorded with the iris manually adjusted to its maximum value.

4 Gain

5 Shutter speed

6 White balance

PWB appears during playback of the movie recorded with the shot transition or [MANU WB TEMP].

Notes

- The exposure correction value (0EV), shutter speed and iris will be displayed during viewing of still images on "Memory Stick Duo."
- Date and time will be displayed in the same area when you select the date and time display. If you record without setting date and time, [-- -- ----] and [--:--:--] will be displayed.
- An accurate shutter speed may not be displayed when you play back a tape recorded with your camcorder on another device. Check the data code that is displayed on the screen when you play back the tape on your camcorder for the accurate shutter speed.

Displaying the settings in your camcorder (Status check)

You can check the settings of the following items.

- Audio setup such as microphone volume level (p. 42, 75)
- Output signal setup ([VCR HDV/DV], etc.) (p. 83)
- Functions assigned to the ASSIGN buttons (p. 44)
- Camera setup (p. 67)
- Optional external recording unit HVR-MRC1 or HVR-DR60

1 Press the STATUS CHECK button C.

2 Turn the SEL/PUSH EXEC dial D until a desired display shows up on the screen.

When the POWER switch B is set to CAMERA, the display changes in the following sequence:

AUDIO → OUTPUT → ASSIGN → CAMERA → EXT DEVICE (when an external device is connected)

When the POWER switch B is set to VCR, the display changes in the following sequence:

AUDIO → OUTPUT → ASSIGN → EXT DEVICE (when an external device is connected)

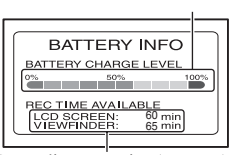
To hide the display

Press the STATUS CHECK button C.

Checking the remaining battery (Battery Info)

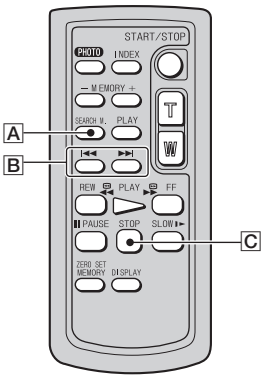
Set the POWER switch B to OFF, then press the DISPLAY/BATT INFO button E. The approximate recordable time in the selected format and battery information appear for about 7 seconds. You can view the battery information for up to 20 seconds by pressing the button again while the information is displayed.

Remaining battery (approx.)



Recording capacity (approx.)

Locating a scene on a tape



Notes

- See page 135 for details on how to use the Remote Commander.

Searching for a scene by date of recording (Date search)

You can search scenes by recording dates.

1 Set the POWER switch to VCR.

2 Press the SEARCH M. button A on the Remote Commander repeatedly to select [DATE SEARCH].

3 Press the I◄◄ (previous)/►►I (next) button B on the Remote Commander to select a recording date.

You can select a date previous or next to the date of the current tape position. Playback automatically starts from the scene recorded on the selected date.

To cancel the operation

Press the STOP button C on the Remote Commander.

Notes

- Each day of recording must be longer than 2 minutes. Your camcorder may not detect the date if the recording of that date is short.
- The date search may not work properly if a blank section exists on the tape.

Searching for a recording start point (Index search)

You can search scenes by indexes recorded at the start of recording (p. 45).

1 Set the POWER switch to VCR.

2 Press the SEARCH M. button A on the Remote Commander repeatedly to select [INDEX SEARCH].

3 Press the I◄◄ (previous)/►►I (next) button B on the Remote Commander to select an index point.

You can select an index previous or next to the index of the current tape position. Playback automatically starts from the scene marked by the index.

To cancel the operation

Press the STOP button C on the Remote Commander.

Notes

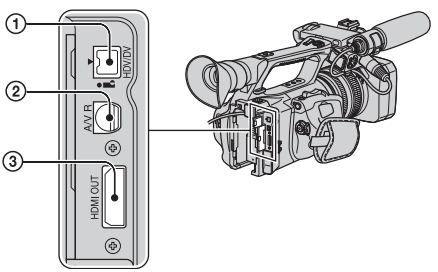
- Recording between indexes must be longer than 2 minutes. Your camcorder may not detect the date if the recording between the indexes is short.
- The index search may not work properly if a blank section exists on the tape.

Playing the picture on a TV

Connection methods and image quality differ depending on what type of TV is connected and connectors used.
Use the supplied AC Adaptor/Charger to obtain AC power (p. 12).
Refer also to the instruction manuals supplied with the device to be connected.

Jacks on your camcorder

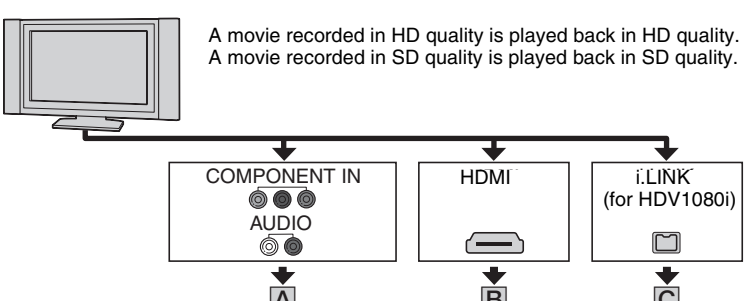
Open the jack cover and connect the cable.



Notes

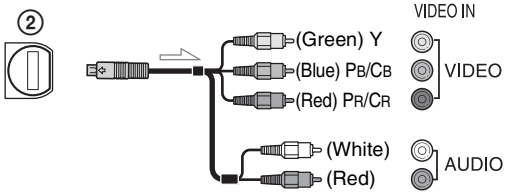
- Set all the necessary menu items before you connect your camcorder to a TV. If you change the settings of [VCR HDV/DV] or [i.LINK SET] after connecting your camcorder to the TV with an i.LINK cable, the TV may not recognize video signals properly.

Connecting to a high definition TV



: Signal flow, ( ): Reference pages

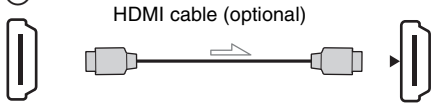
Type	Camcorder	Cable	TV	Menu Setting
A	②	Component A/V cable (supplied)	COMPONENT VIDEO IN	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [COMPONENT] → [1080i/576i] (84)



Notes

- If you connect only component video plugs, audio signals are not output. Connect the white and red plugs to output audio signals.

Type	Camcorder	Cable	TV	Menu Setting
B	③	HDMI cable (optional)	HDMI IN	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83)



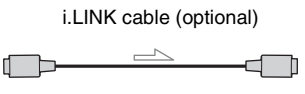
Notes

- **Use an HDMI cable with the HDMI logo.**
- Pictures in the DVCAM (DV) format are not output from the HDMI OUT jack, if copyright protection signals are recorded in the pictures.
- DVCAM (DV) format pictures input to the camcorder via i.LINK cable (p. 97) cannot be output.
- Your TVs may not function correctly (for example, no sound or image). Do not connect the HDMI OUT jack of your camcorder and HDMI OUT jack of the external device with the HDMI cable. This may cause a malfunction.

Tips

- HDMI (High-Definition Multimedia Interface) is an interface to send both video and audio signals. Connecting HDMI OUT jack to an external device supplies high quality images and digital audio to you.

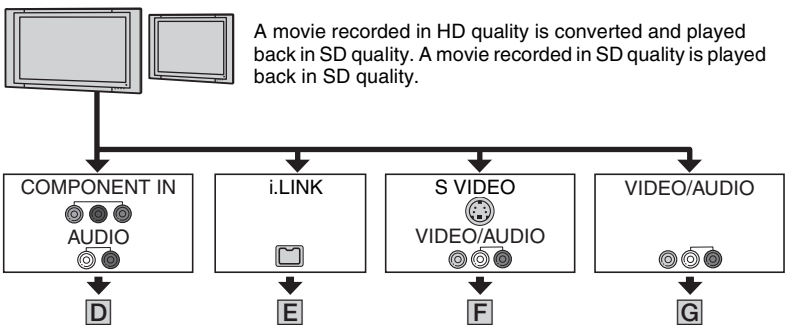
: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
C				(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [i.LINK SET] → [HDV → DV CONV] → [OFF] (85)

Notes

- **Your TV needs to have an i.LINK jack compatible with HDV1080i. For details, confirm the specifications of your TV.**
- If your TV is not compatible with HDV1080i, connect your camcorder and TV with the supplied component A/V cable and A/V connecting cable as illustrated in A.
- The TV needs to be set so that it recognizes that the camcorder is connected. Refer to the instruction manuals supplied with your TV.
- This camcorder has a 4-pin i.LINK terminal. Select a cable that fits the terminal on the TV to be attached.

Connecting to a 16:9 (wide) or 4:3 TV



To set the aspect ratio according to the connected TV (16:9/4:3)

Set the down-convert setting as follows:
For HDV format signals:
(IN/OUT REC) menu → [VIDEO OUT] → [DOWN CONVERT]
For DV format signals:
(IN/OUT REC) menu → [VIDEO OUT] → [DV WIDE CONV]

Tips

- When your TV is monaural (When your TV has only one audio input jack), connect the yellow plug of the A/V connecting cable to the video input jack and connect the white (left channel) or the red (right channel) plug to the audio input jack of your TV or VCR. When you want to play back the sound in monaural mode, use a connecting cable for that purpose.

: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
D	②	Component A/V cable (supplied)	COMPONENT VIDEO IN: (Green) Y, (Blue) PB/CB, (Red) PR/CR → VIDEO; (White), (Red) → AUDIO	(IN/OUT REC) [VCR HDV/DV] →[AUTO] (83) [VIDEO OUT] →[COMPONENT] →[1080i/576i] (84) [VIDEO OUT] →[DOWN CONVERT]/[DV WIDE CONV] →[SQUEEZE]/[LETTER BOX]/[EDGE CROP]* (85)
E	①	i.LINK cable (optional)	i.LINK	(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [i.LINK SET] → [HDV → DV CONV] → [ON] (85)

Notes

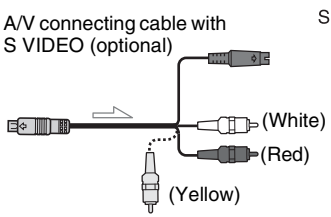
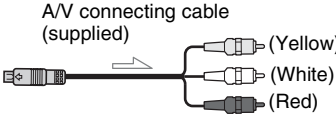
- If you connect only component video plugs, audio signals are not output. Connect the white and red plugs to output audio signals.

Notes

- The TV needs to be set so that it recognizes that the camcorder is connected. Refer to the instruction manuals supplied with your TV.
- This camcorder has a 4-pin i.LINK terminal. Select a cable that fits the terminal on the TV to be attached.

* Change the settings according to the TV connected.

: Signal flow, ( ): Reference pages

Type	Camcorder	Cable	TV	Menu Setting
F				(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [DOWN CONVERT]/ [DV WIDE CONV] → [SQUEEZE]/[LETTER BOX]/[EDGE CROP]* (85)
G				(IN/OUT REC) [VCR HDV/DV] → [AUTO] (83) [VIDEO OUT] → [DOWN CONVERT]/ [DV WIDE CONV] → [SQUEEZE]/[LETTER BOX]/[EDGE CROP]* (85)

Notes

- When connecting only an S VIDEO plug (S VIDEO channel), audio signals are not output. To output audio signals, connect the white and red plugs of the A/V connecting cable with S VIDEO to the audio input jack of your TV.
- This connection produces higher resolution pictures compared with the A/V connecting cable (Type G).

* Change the settings according to the TV connected.

Tips

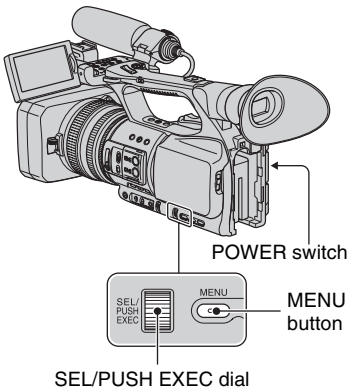
- If you connect your camcorder to the TV using more than one type of cable to output images, the order of priority of the TV input jacks is as follows:
  HDMI → component video → S VIDEO → video.
- See page 121 for the details of i.LINK.

When connecting to your TV via a VCR

Select the connecting method on page 93 depending on the input jack of the VCR. Connect your camcorder to the LINE IN input on the VCR using the A/V connecting cable. Set the input selector on the VCR to LINE (VIDEO 1, VIDEO 2, etc.).

Using the menu items

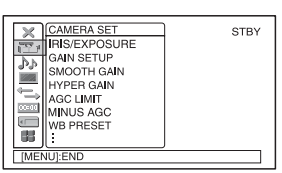
You can change various settings or make detailed adjustments using the menu items displayed on the screen.



1 Set the POWER switch to CAMERA or VCR.

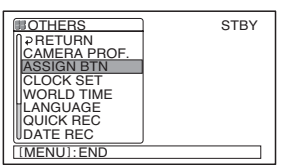
2 Press the MENU button.

The menu index screen appears.

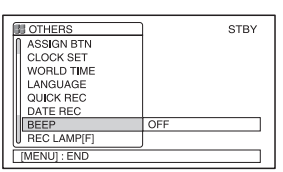


3 Turn the SEL/PUSH EXEC dial until the icon of the desired menu is highlighted, then press the dial to select the menu.

CAMERA SET (p. 67)
AUDIO SET (p. 75)
DISPLAY SET (p. 78)
IN/OUT REC (p. 83)
TC/UB SET (p. 86)
MEMORY SET (p. 88)
OTHERS (p. 90)

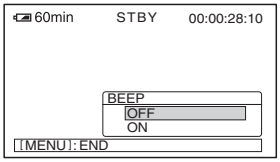


4 Turn the SEL/PUSH EXEC dial until the desired menu item is highlighted, then press the dial to select the item.



The available menu items vary depending on the position of the power switch of your camcorder. Unavailable items will be grayed out.

5 **Turn the SEL/PUSH EXEC dial until the desired setting is highlighted or to bring up the desired setting, then press the dial to confirm the setting.**



6 **Press the MENU button to hide the menu screen.**

To return to the previous screen, select [RETURN].

Menu items

Available menu items (●) vary depending on the POWER switch position.

Position of POWER switch:	CAMERA	VCR
(CAMERA SET) menu (p. 67)		
IRIS/EXPOSURE (AS)	●	–
GAIN SETUP	●	–
SMOOTH GAIN	●	–
HYPER GAIN (AS)	●	–
AGC LIMIT	●	–
MINUS AGC	●	–
WB PRESET	●	–
WB OUTDR LVL	●	–
WB TEMP SET	●	–
ATW SENS	●	–
SMOOTH WB	●	–
AE SHIFT (AS)	●	–
AE RESPONSE	●	–
AT IRIS LMT	●	–
ECS FREQ.	●	–
FLCKR REDUCE	●	–
CNTRST ENHCR	●	–
BACK LIGHT (AS)	●	–
SPOTLIGHT (AS)	●	–
STEADYSHOT (AS)	●	–
AF ASSIST	●	–
FOCUS MACRO (AS)	●	–
HANDLE ZOOM	●	–
SPEED ZOOM	●	–
D.EXTENDER (AS)	●	–
FADER (AS)	●	–
SMTH SLW REC (AS)	●	–
INTERVAL REC	●	–
DV FRAME REC DVCAM DV	●	–
SHOT TRANSITION (AS)	●	–
x.v.Color HDV1080i	●	–
COLOR BAR (AS)	●	–
(AUDIO SET) menu (p. 75)		
DV AU.MODE DVCAM DV	●	–
AUDIO LIMIT	●	–
INT MIC SET	●	–
XLR SET	●	–
AUDIO CH SEL	–	●
DV AUDIO MIX DVCAM DV	–	●

Position of POWER switch:	CAMERA	VCR
(DISPLAY SET) menu (p. 78)		
ZEBRA (AS)	●	–
HISTOGRAM	●	–
PEAKING (AS)	●	–
MARKER (AS)	●	–
EXP.FOCUS TYPE	●	–
CAM DATA DSP	●	–
AU.LVL DISP	●	–
ZOOM DISPLAY	●	–
FOCUS DISP	●	–
SHUTTER DISP	●	–
LCD BRIGHT	●	●
LCD COLOR	●	●
LCD BL LEVEL	●	●
VF B.LIGHT	●	●
VF COLOR	●	●
VF POWERMODE	●	●
LETTER SIZE	●	●
REMAINING	●	●
DISP OUTPUT	●	●
(IN/OUT REC) menu (p. 83)		
REC FORMAT	●	–
VCR HDV/DV	–	●
HDV PROGRE. HDV1080i	●	–
DV PROGRE. DVCAM DV	●	–
DV REC MODE DVCAM DV	●	●
DV WIDE REC DVCAM DV	●	–
VIDEO OUT	●	●
i.LINK SET	●	●
EXT REC CTRL	●	–

Position of POWER switch:	CAMERA	VCR
(TC/UB SET) menu (p. 86)		
TC PRESET	●	●
TC COUNTUP (AS)	●	●
UB PRESET	●	●
TC RUN	●	●
TC MAKE	●	●
TC LINK	●	–
UB TIME REC	●	●
UB-DATE/TC-TIME	●	●
(MEMORY SET) menu (p. 88)		
ALL ERASE	–	●
FORMAT	●	●
FILE NO.	●	●
NEW FOLDER	●	●
REC FOLDER	●	●
PB FOLDER	–	●
(OTHERS) menu (p. 90)		
CAMERA PROF.	●	●
ASSIGN BTN	●	●
CLOCK SET	●	●
WORLD TIME	●	●
LANGUAGE	●	●
PB ZOOM	–	●
QUICK REC (HDV1080)	●	–
DATE REC	●	–
BEEP	●	●
REC LAMP[F]	●	–
REC LAMP[R]	●	–
REMOTE CTRL	●	●
HOURS METER	●	●

(CAMERA SET) menu

Settings to adjust your camcorder to the recording conditions (GAIN SETUP/BACK LIGHT/STEADYSHOT, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button → select the (CAMERA SET) with the SEL/PUSH EXEC dial.

IRIS/EXPOSURE (AS)

■ RING ASSIGN

You can select either [IRIS] (default setting) or [EXPOSURE] as the function assigned to the iris ring (p. 28).

■ RING ROTATE

You can select the rotation direction of the iris ring.

►NORMAL

Makes images dark with clockwise rotation of the iris ring.

OPPOSITE

Makes images dark with counter-clockwise rotation of the iris ring.

Notes

- You cannot assign [RING ASSIGN] to an ASSIGN button.
- When the AUTO/MANUAL switch is set to AUTO, the IRIS/EXPOSURE button is not available.

Tips

- The iris, gain and shutter speed values are adjusted as follows when you change the [RING ASSIGN] setting with the AUTO/MANUAL switch set to MANUAL.
  - – When you change [RING ASSIGN] from [IRIS] to [EXPOSURE]
    The adjustment remains in the same mode that it was in prior to changing [RING ASSIGN]. If it is in automatic adjustment, it remains in automatic adjustment after changing [IRIS] to [EXPOSURE]. If it is in manual adjustment, it remains in manual adjustment after changing [IRIS] to [EXPOSURE].
    You can adjust the iris, gain and shutter speed with the iris ring when E is displayed next to the values on the screen.
    Adjustment for the gain and shutter speed can be switched between [EXPOSURE] and manual.
  - – When you change [RING ASSIGN] from [EXPOSURE] to [IRIS]
    The adjustment remains in the same mode that it was in prior to changing [RING ASSIGN]. If it is in automatic adjustment, it remains in automatic adjustment after changing [EXPOSURE] to [IRIS]. If it is in manual adjustment, it remains in manual adjustment after changing [EXPOSURE] to [IRIS].
    Adjustments for the gain and shutter speed can be switched between automatic and manual.
- You can assign [RING ROTATE] to one of the ASSIGN buttons (p. 44).

GAIN SETUP

You can set gain values for H, M and L positions of the gain switch. The default settings of [H], [M] and [L] are 18dB, 9dB and 0dB, respectively.

① Select [H], [M] or [L] with the SEL/PUSH EXEC dial.

② Set the gain value with the SEL/PUSH EXEC dial, and press the dial.
You can select the value between -6dB and 21dB by 3dB. The larger the value, the higher the gain.

③ Select [OK] with the SEL/PUSH EXEC dial.

④ Press the MENU button to hide the menu screen.

SMOOTH GAIN

You can set the transition speed at which the gain setting shifts from one value to another, set for the gain switch positions, when you switch the gain switch from a position to another. You can select the transition speed from [FAST], [MIDDLE] and [SLOW] or set to [OFF]. The default setting is [OFF].

HYPER GAIN (AS)

When you set this function to [ON] (HYPER), you can increase the gain to its limit. The default setting is [OFF].

Notes

- During the hyper gain, the picture quality will be reduced due to noise.
- [HYPER GAIN] is automatically set to [OFF] if you turn the power off and back on.
- When you record a movie with [HYPER GAIN] set to [ON] or the gain set to [-6dB] and play it back with the data code, the gain value is displayed as [---].

Tips

- You are recommended to use this function with manual focus.

AGC LIMIT

You can select the upper limit for the Auto Gain Control (AGC) from [OFF] (21dB, the default setting), [18dB], [15dB], [12dB], [9dB], [6dB], [3dB] and [0dB].

Notes

If you adjust the gain manually, you cannot obtain the effect of [AGC LIMIT].

MINUS AGC

When you set this function to [ON], the automatic gain control range can be expanded to the negative range. Especially in a bright environment, minus gain control allows more suitable gain setting and enables low noise recording. The dynamic range of your camcorder is not reduced when you set [MINUS AGC] to [ON].

► ON

Enables minus gain control during automatic gain control, as required.

OFF

Disables minus gain control during automatic gain control.

WB PRESET

You can use the preset white balance. For more details, see page 31.

WB OUTDR LVL

You can set an offset value to adjust the outdoor white balance when you set [WB PRESET] to [OUTDOOR]. You can select the offset value from [-7] (bluish) - [0] (normal) - [+7] (reddish). The default setting is [0] .

WB TEMP SET

You can set the color temperature between 2300K and 15000K in 100K steps when you set [WB PRESET] to [MANU WB TEMP].

ATW SENS

You can set the auto white balance operation under a reddish light source such as an incandescent lamp or candle, or under a bluish light source such as in outdoor shade.

► INTELLIGENT

Automatically adjusts the white balance so that scenes look natural for the light source.

HIGH

Automatically adjusts the white balance while reducing redness or blueness.

MIDDLE

LOW

Automatically adjusts the white balance while increasing redness or blueness.

Notes

- This is only effective when white balance is adjusted automatically.
- [ATW SENS] is not effective under a clear sky or the sun.

SMOOTH WB

You can set the transition speed at which the color temperature values shifts from one value to another, set for the white balance memory switch positions, when you switch the white balance memory switch from a position to another. You can select the transition speed from [FAST], [MIDDLE] and [SLOW] or set to [OFF]. The default setting is [OFF].

AE SHIFT (AS)

You can set an offset value to adjust the automatic exposure adjustment value between [-7] (dark) and [+7] (bright) with the SEL/PUSH EXEC dial. The default setting is [0] . AS and selected value appears on the screen when you change the value from the default setting.

Notes

- This function is not effective while you adjust the iris, shutter speed and gain all manually.
- [AE SHIFT] is canceled when [EXPOSURE] is manually adjusted.
- This function is not effective when [HYPER GAIN] is set to [ON].

AE RESPONSE

You can select the speed at which the automatic exposure adjustment function follows changes in the brightness of the subject. You can select the speed from [FAST], [MIDDLE] and [SLOW]. The default setting is [FAST].

AT IRIS LMT

You can select the highest iris value for the automatic adjustment from [F11], [F9.6], [F8], [F6.8], [F5.6], [F4.8] and [F4]. The default setting is [F11].

Notes

- This function is not effective during the manual iris adjustment.

ECS FREQ.

You can set the shutter speed so that horizontal strips do not appear on a monitor screen, which is likely to occur when you record a monitor screen. Change the setting with the SEL/PUSH EXEC dial, then press the dial to confirm the setting. The default setting is [50.00Hz] .
You must set the shutter speed to the ECS (ECS) prior to setting this function (p. 30).
You can set the shutter speed in the following frequency ranges depending on the setting of [SCAN TYPE]. How to select [SCAN TYPE] depends on the setting of [REC FORMAT] of (IN/OUT REC) menu.
[HDV1080i]: [HDV PROGRE.] → [REC TYPE] → [SCAN TYPE]
[DV]: [DV PROGRE.] → [SCAN TYPE]

SCAN TYPE	Frequency range
50	50.00 Hz to 200.0 Hz
25	25.00 Hz to 200.0 Hz

Notes

- When you record a movie with the shutter speed set in [ECS FREQ.] and play it back with the data code, the shutter speed value is displayed as [---].

FLCKR REDUCE

►ON

Reduces flickering. Flickering of the screen under a light source such as fluorescent lamps will be reduced.

OFF

Not reduce flickering.

Notes

- Flickering may not be reduced for certain light sources.

CNTRST ENHCR

When you set this function to [ON], your camcorder detects high contrast images, such as backlit scenes, and automatically improves the unexposed images. The default setting is [OFF].

Notes

- When you set [BACK LIGHT] to [ON], [CNTRST ENHCR] is temporarily disabled.

BACK LIGHT (AS)

When you set this function to [ON] (), you can correct backlighting. The default setting is [OFF].

Notes

- [BACK LIGHT] is set to [OFF] when you set [SPOTLIGHT] to [ON].
- [BACK LIGHT] is set to [OFF] when [EXPOSURE] is manually adjusted.
- [BACK LIGHT] is set to [OFF] if at least two of iris, gain, and shutter speed are adjusted manually.
- [BACK LIGHT] is set to [OFF] when [HYPER GAIN] is set to [ON].

SPOTLIGHT (AS)

When you set this function to [ON] (), you can prevent overexposure of light during recording of a subject under strong light, such as a stage. For example, you can prevent people's faces from over-highlighting. The default setting is [OFF].

Notes

- [SPOTLIGHT] is set to [OFF] when you set [BACK LIGHT] to [ON].
- [SPOTLIGHT] is set to [OFF] when [EXPOSURE] is manually adjusted.
- You cannot use the spotlight function if at least two of iris, gain, and shutter speed are adjusted manually.
- [SPOTLIGHT] is set to [OFF] when [HYPER GAIN] is set to [ON].

STEADYSHOT (AS)

■ ON/OFF

When you select [ON], you can reduce camera shakes. Select [OFF] ( ) when you use a tripod (optional) to make images look natural. The default setting is [ON].

■ TYPE

You can select a type of camera-shake reduction for different recording situations.

HARD

Reduces camera shakes at a high level. This setting is not suitable for panorama tilt recordings.

►STANDARD

Reduces camera shakes at a standard level.

SOFT

Reduces camera shakes at a low level. Slight unsteadiness remains in movies, which make the movies look as they are.

WIDE CONV.

This item is provided for a wide conversion lens (optional), and especially effective for Sony VCL-HG0872A wide conversion lens.

AF ASSIST

When you set this function to [ON], you can temporarily focus manually using the focus ring during the auto focus adjustment. The default setting is [OFF].

Notes

- This function is effective only when the FOCUS switch is set to AUTO (p. 27).

FOCUS MACRO (AS)

When you set this function to [ON], you can focus on a subject within 80 cm (about 2 5/8 feet). The default setting is [ON]. When you set this function to [OFF] (OFF), you can set fine focus on a subject further than 80 cm regardless of the zoom position although you will lose focus on a subject within 80 cm.

HANDLE ZOOM

You can select the zoom speed for the FIX position of the handle zoom switch from [1] (slow) through [8] (fast). The default setting is [3].

SPEED ZOOM

When you set this function to [ON], you can increase the zoom speed of the zoom lever and the handle zoom. The default setting is [OFF].

Notes

- When you set this function to [ON], the operation sound of the zoom may also be recorded.

D.EXTENDER (AS)

When you set this function to [ON] ( ), the displayed image becomes 1.5 times larger. The image quality decreases because the image is digitally processed. This function helps you to focus on far-away subjects such as a wild bird away at a distance. The default setting is [OFF].

Notes

- This function is automatically set to [OFF] when you turn the power off and back on.

FADER (AS)

You can add visual effects to transition between scenes.

① Select [WHITE FADER] or [BLACK FADER] during standby to fade in with the selected effect or recording to fade out with the selected effect.
② Press the REC START/STOP button.
The fader indicator stops flashing and disappears when the fading is complete.

To cancel before starting the operation, select [OFF] in step ①.
The setting will be cleared every time you press the REC START/STOP button.

Fading out Fading in

WHITE FADER

BLACK FADER

Notes

- This function is automatically set to [OFF] when you turn the power off and back on.

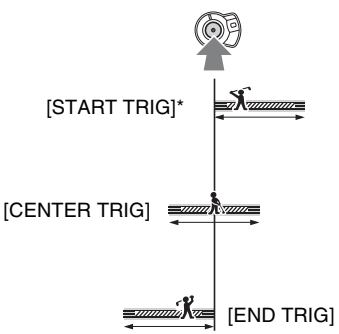
SMTH SLW REC (AS)

Fast moving subjects and actions, which cannot be captured under the general recording conditions, can be recorded in smooth moving slow-motion.
This is useful for recording fast actions such as a golf or tennis swing.

Select [EXECUTE], and press the REC START/STOP button on the [SMTH SLW REC] screen.
A recording of the length set in [REC TIME] is stretched by 4 times and recorded as a slow-motion movie.
Recording ends when [Recording...] disappears from the screen.
To cancel [SMTH SLW REC], press the MENU button.
You can select the [SMTH SLW REC] settings suitable for your recording.

■ REC TIMING

You can use this to select when recording starts in relation to when the REC START/STOP button is pressed.



* The default setting is [START TRIG].

■ REC TIME

You can select the recording time from [3sec], [6sec] and [12sec]. The default setting is [3sec].
The picture quality deteriorates as the recording time increases.

■ TRIG

When you set this function to [ON], recording automatically starts in response to a preset sound level instead of the REC START/STOP button being pressed.
The [TRIG] setting is canceled when you turn the power off and back on.

■ TRIG LEVEL

You can select the sound level at which recording is triggered from [HIGH], [MIDDLE] and [LOW] in [TRIG LEVEL]. The default setting is [HIGH].

Notes

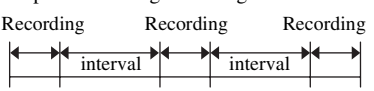
- Sounds cannot be recorded.
- The shutter speed is automatically set to 1/215 second when you start [SMTH SLW REC].
- The recording time may be shorter than the set time, depending on recording conditions.
- The image quality is lower than with the regular recording.

Tips

- After executing [SMTH SLW REC] with an ASSIGN button, you can also cancel [SMTH SLW REC] by pressing the ASSIGN button again. See page 44 for details on how to use the ASSIGN buttons.
- When [TRIG] is set to [ON], you can also start recording by pressing the REC START/STOP button.
- When you manually set the microphone volume to a low level, [TRIG] may not work properly. We recommend that you set [TRIG LEVEL] to [MIDDLE] or [LOW].

INTERVAL REC

You can record a series of movies on a tape at regular intervals. This function is useful to observe things like cloud movements or daylight changes. The scenes run smoothly into each other when you play back the tape. Use the AC Adapter/Charger to obtain AC power for long recording.



① Select [ON/OFF] → [ON] with the SEL/PUSH EXEC dial.
② Perform the following step if you are changing the recording time from the default setting of [0.5sec]. If you are keeping the default recording time, go straight to step ③.

Select [REC TIME] → [0.5sec], [1sec], [1.5sec] or [2sec] with the SEL/PUSH EXEC dial.

③ Perform the following step if you are changing the interval time from the default setting of [30sec]. If you are keeping the default interval time, go straight to step ④.

Select [INTERVAL] → [30sec], [1min], [5min] or [10min].

④ Select [OK] with the SEL/PUSH EXEC dial.

⑤ Press the MENU button to hide the menu screen.

⑥ Press the REC START/STOP button.

The [INTERVAL REC] recording starts.

To cancel [INTERVAL REC], press the REC START/STOP button.
The operation of your camcorder differs depending on when you press the REC START/STOP button.
If you press the button during [INTERVAL REC] recording, the recording temporarily stops. If you press it again, the [INTERVAL REC] recording restarts,
If you press the button during [INTERVAL REC] interval, the [INTERVAL REC] recording stops and regular recording starts. If you press it again, regular recording stops. If you press the button once again, the [INTERVAL REC] recording restarts.
To cancel the [INTERVAL REC] recording, select [ON/OFF] → [OFF] with the SEL/PUSH EXEC dial.

Notes

- The recording time and interval time may differ slightly from the settings.
- If you focus manually, you can get sharp images even if the lighting changes.

DV FRAME REC DVCAM DV SP

You can record stop motion (or frame-by-frame) animation movies. That type of animation uses a technique of changing the subject, such as a doll or a toy's positions and recording it at each different position while your camcorder sits still. Use the Remote Commander to reduce camera shakes.

► OFF

Not use this function.

ON ( )

Records a movie by stop motion (or frame-by-frame) technique.

① Select [ON] with the SEL/PUSH EXEC dial.

② Press the MENU button to hide the menu screen.

③ Press the REC START/STOP button.

Your camcorder records a movie for about 6 frames and returns to standby.

④ Move the subject and repeat step ③.

Notes

- When you use frame recording continuously, the remaining tape time will not be indicated correctly.
- The last scene will be longer than other scenes.
- You cannot record index signals during frame recording.
- This function is automatically set to [OFF] when you turn the power off and back on.

SHOT TRANSITION AS

You can set [TRANS TIME], [TRANS CURVE], [START TIMER] and [REC LINK].
See page 46 for details on the shot transition function.

■ TRANS TIME

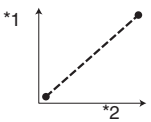
You can set the transition time between [3.5sec] and [90.0sec]. The default setting is [4.0sec].

■ TRANS CURVE

You can select the transition curve. Characteristics of the transition curves are illustrated in the following graphs.
*1: parameter level
*2: time

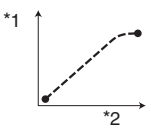
LINEAR

Makes the transition linearly.



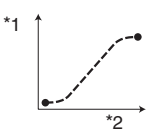
►SOFT STOP

Makes the transition slowly at the end.



SOFT TRANS

Makes the transition slowly at the beginning and end, and linearly in between.



Notes

- You cannot change [TRANS TIME] and [TRANS CURVE] settings during store, check, or execution of [SHOT TRANSITION]. Cancel [SHOT TRANSITION] setting by pressing the ASSIGN 4 button several times before changing [TRANS TIME] or [TRANS CURVE] setting.

■ START TIMER

You can set the timer for starting the shot transition. You can select the time from [5sec], [10sec] and [20sec]. The default setting is [OFF].

■ REC LINK

►OFF

Not use this function

SHOT-A

Starts transition to SHOT-A when recording is started.

SHOT-B

Starts transition to SHOT-B when recording is started.

x.v.Color HDV1080i

When you set this function to [ON], you can record with the wider color range. Your camcorder can reproduce brilliant and vivid colors for flowers and the beautiful blue-green of tropical oceans that cannot be matched by conventional technologies. The default setting is [OFF].

Notes

- The colors may not be well reproduced when you play back a movie recorded with this function set to [ON] on a TV that does not support x.v.Color.
- You cannot set [x.v.Color] in the following cases:
  - – When recording in SD (standard) format
  - – When recording movies
- When you set [x.v.Color] to [ON], the picture profile will be disabled.

COLOR BAR AS

■ ON/OFF

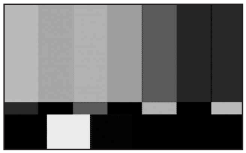
When you select [ON], you can display color bars on the screen or record them on a tape. This function helps you to adjust colors when you view movies recorded with your camcorder on a TV or a monitor. The default setting is [OFF].

Notes

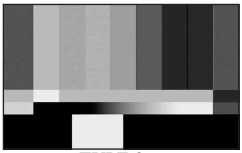
- This function is automatically set to [OFF] when you turn the power off and back on.

■ TYPE

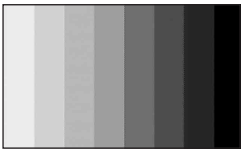
Selects a type of the color bars.



TYPE 1



TYPE 2



TYPE 3

TYPE 4 (75% brightness of TYPE 3)

■ TONE

Outputs audio tone signals (1 kHz: full bit -18 dB) when you set [TONE] to [ON]. The default setting is [OFF].

(AUDIO SET) menu

Settings for the audio recording (DV AU.MODE/XLR SET, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button→ select the (AUDIO SET) with the SEL/PUSH EXEC dial.

DV AU.MODE (DV Audio mode)

DVCAM DV

FS32K (32k)

Records in the 12-bit mode (2 stereo sounds). Select this setting for the DVCAM/DV SP recording.

► FS48K (48k)

Records in the 16-bit mode (1 stereo sound with high quality). Select this setting for the DVCAM/DV SP recording.

Notes

- When recording in the HDV format, sound is automatically recorded in the [FS48K] mode.
- NS appears when the DVCAM standard is not met (p. 117).

AUDIO LIMIT

You can set the clipping-noise reduction function for CH1/CH2.

► OFF

Disables the function.

ON

Enables the function.

Notes

- This function is available only when you set the AUTO/MAN switch to MAN.

Press the MENU button → select the (AUDIO SET) with the SEL/PUSH EXEC dial.

INT MIC SET

■ INT MIC NR

You can reduce noise from the internal microphone.

►ON

Reduces noise from the internal microphone.

NR appears on the status check screen.

OFF

Does not reduce noise from the internal microphone.

■ INT MIC SENS

You can set recording sensitivity of the internal microphone.

►NORMAL

Sensitivity that is normally used in professional recordings.

HIGH

Sensitivity that is normally used in consumer recordings.

SNS-Hi appears on the status check screen.

■ INT MIC WIND

►OFF

Disables wind noise reduction.

ON

Enables wind noise reduction.

appears on the status check screen.

XLR SET

■ XLR AGC LINK

You can select either linked or separate AGC (Auto Gain Control) of CH1 and CH2 when using an external microphone.

►SEPARATE

Separately applies the AGC for CH1/CH2. Sound inputs from CH1/CH2 will be recorded as separate sound.

LINKED

Applies the AGC of CH1 linked with that of CH2. Sound inputs from CH1/CH2 will be recorded as a set of sound such as stereo sound. A[appears on the status check screen.

Notes

- This function is available when the CH1 and CH2 switches are set to AUTO and the INPUT1 and INPUT2 switches are both set to MIC or both set to LINE (p. 42).

■ AU.MAN GAIN

You can select either linked or separate audio level control of CH1and CH2 when using an external microphone.

►SEPARATE

Separately controls the audio levels of CH1 and CH2. Sound inputs from CH1 and CH2 will be recorded as separate sound.

LINKED (M[1/2])

Controls the audio level of CH1 linked with that of CH2. Sound inputs from CH1 and CH2 will be recorded as a set of sound such as stereo sound. M[appears on the status check screen.

Notes

- This function is available when the CH1 and CH2 switches are set to MAN and the INPUT1 and INPUT2 switches are both set to MIC or both set to LINE (p. 42).
- When you select [LINKED], you can adjust the volume with the AUDIO LEVEL dial of CH1 (p. 42).

■ INPUT1 MIC NR

You can reduce noise from the microphone.

►ON

Reduces noise from the microphone.

NR appears on the status check screen.

OFF

Does not reduce noise from the microphone.

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

■ INPUT1 TRIM

You can adjust the input signal level from INPUT1.
You can select from [-18dB], [-12dB], [-6dB], [0dB], [+6dB] and [+12dB]. The default setting is [0dB].

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

■ INPUT1 WIND

►OFF

Disables wind noise reduction.

ON

Enables wind noise reduction.
appears on the status check screen.

Notes

- The setting is not effective when you set the INPUT1 switch to LINE.

■ INPUT2 MIC NR

■ INPUT2 TRIM

■ INPUT2 WIND

You can set INPUT2 in the same way as INPUT1.

Tips

- -48dBu is set as 0dB in your camcorder.
- Set [INPUT TRIM] to [0dB] for the supplied microphone (ECM-XM1).
- Set [INPUT TRIM] to [+12dB] for a microphone with an average sensitivity, including the optional microphone (Sony ECM-NV1).
- The INPUT TRIM function adjusts the input level from an external microphone. When using a highly sensitive microphone or recording loud sound, set this to the minus side. When using a less sensitive microphone or recording quiet sound, set it to the plus side.
- When recording loud sound, the sound may be distorted at either the input point or the recording point. If it is distorted at the input point, adjust the sound using the INPUT TRIM function. If it is distorted at the recording point, lower the total volume level manually.
- If you set INPUT TRIM too far to the minus side, the microphone volume becomes too low, resulting in a poor signal to noise ratio.
- Test the effect of the INPUT TRIM function according to the microphone used or the sound field of the recording site before actual recording.

AUDIO CH SEL

►CH1,CH2

Reproduces sound of CH1 and CH2 in respective channels.

CH1

Reproduces sound of CH1 in channels 1 and 2.

CH2

Reproduces sound of CH2 in channels 1 and 2.

CH1+CH2

Reproduces mixed sound of CH1 and CH2 in channels 1 and 2.

Tips

- When you select [CH1,CH2] and play back a tape on your camcorder, sound of CH1 + CH2 comes out of the speakers.
- When you select [CH1+CH2], the same sound is outputted from right and left speakers of a device to be connected.

DV AUDIO MIX DVCAM DV SP

You can monitor the sound dubbed from another device or recorded through 4-channel microphone during playback. You can set how to output the sound.

►CH1,CH2

Outputs only the sound recorded in CH1 and CH2 during recording.

MIX

Outputs mixed sound of the sound recorded in CH1 and CH2 during

Press the MENU button → select the (AUDIO SET) with the SEL/PUSH EXEC dial.

recording and the sound dubbed in CH3 and CH4.

CH3,CH4

Outputs only the sound dubbed in CH3 and CH4.

(DISPLAY SET) menu

Display settings of the display and the viewfinder (MARKER/VF B.LIGHT/DISP OUTPUT, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button → select the (DISPLAY SET) with the SEL/PUSH EXEC dial.

ZEBRA (AS)

You can display a zebra pattern as a guide for adjusting brightness.

■ ON/OFF

When you select [ON], and the brightness level appear on the screen. The zebra pattern will not be recorded on a tape or a "Memory Stick Duo." The default setting is [OFF].

■ LEVEL

You can select the brightness level between 70 and 100 or 100+. The default setting is [70].

Tips

- The zebra pattern is a strip pattern displayed over a part of an image on the screen when the part is higher than a preset brightness level.

HISTOGRAM

You can adjust the iris while referring to a histogram. A histogram is a graph that shows the distribution of the image brightness. You can use the histogram as a guide for adjusting the iris. The histogram will not be recorded on a tape or a "Memory Stick Duo."

▶ OFF

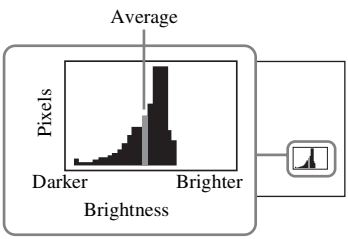
Does not display a histogram.

NORMAL

Displays a histogram.

ADVANCE

Displays a histogram, and a bar that indicates an average of the brightness levels around the center of an image (within the marker) on the histogram.



Tips

- The left area on the graph shows the darker areas of the image while the right area shows the brighter areas.
- A vertical line that indicates the brightness level of [ZEBRA] will be displayed on the histogram when you set [ZEBRA] to [ON].

PEAKING (AS)

■ ON/OFF

When you select [ON], you can display an image on the screen with its details enhanced. This function helps you to adjust the focus. The default setting is [OFF].

■ COLOR

You can select peaking color from [WHITE], [RED] and [YELLOW]. The default setting is [WHITE].

■ LEVEL

You can select a peaking sensitivity from [HIGH], [MIDDLE] and [LOW]. The default setting is [MIDDLE].

Notes

- You cannot record an image with enhanced details on a tape or a "Memory Stick Duo."

Tips

- You can focus more easily using this function in combination with the expanded focus function (p. 28).

MARKER (AS)

■ ON/OFF

When you select [ON], you can display markers. The default setting is [OFF]. Markers will not be recorded on a tape or "Memory Stick Duo."

■ CENTER

When you select [ON], you can display a marker at the center of the screen. The default setting is [ON].

■ ASPECT

When you select [ON], you can display markers at boundaries of display area defined by the aspect ratio, which you can select from [4:3], [13:9] and [14:9]. The default setting is [OFF].

■ SAFETY ZONE

When you select [ON], then [80%] or [90%], you can display markers at boundaries of display area that regular home TVs can display. The default setting is [OFF].

■ GUIDEFRAME

When you select [ON], you can display frame markers that help you to check horizontal and vertical positions of a subject. The default setting is [OFF].

Notes

- You cannot output display information , such as the time code, to an external device via external output jacks when [MARKER] is set to [ON].
- You cannot display markers when you set [DATE REC] to [ON].

Tips

- You can display all types of markers at the same time.
- You can obtain a balanced composition by positioning the subject at the cross points of the guideframe marker.
- You can display markers only on the LCD panel and viewfinder. You cannot display them on an external device.

EXP.FOCUS TYPE

You can set a type of the expanded focus display.

►TYPE 1

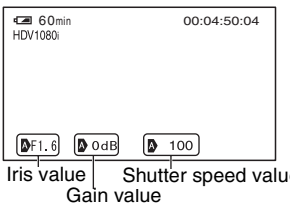
Simply enlarges images.

TYPE 2

Enlarges and shows images in white and black.

CAM DATA DSP (Camera data display)

When you set this function to [ON], you can constantly display the iris, shutter speed and gain settings on the screen. The default setting is [OFF].

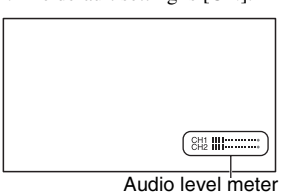


Tips

- The settings appear on the screen during the manual adjustment regardless of the settings of this function.
- A indicates that the settings are automatically adjusted values.
- The displayed settings are different from the settings that will be displayed when you press the DATA CODE button (p. 52).

AU.LVL DISP (Audio level display)

When you set this function to [ON], you can display the audio level meter on the screen. The default setting is [ON].



ZOOM DISPLAY

►BAR

Displays a bar that indicates the zoom position.

NUMBER

Displays a number (0 through 99) that indicates the zoom position.

FOCUS DISP

You can select how to display the focal distance during manual focus.

►**METER**

Displays the focal distance in meters.

FEET

Displays the focal distance in feet.

SHUTTER DISP

You can select how to display the shutter speed.

►**SECOND**

Displays the shutter speed in seconds.

DEGREE

Displays the shutter speed in degrees.

The shutter speed equal to the period that your camcorder reads image data from the image sensor is defined as 360 degrees. The degree is calculated based on this definition and displayed.

– When [SCAN TYPE] is set to [50], 1/50 second is defined as 360 degrees.

– When [SCAN TYPE] is set to [25], 1/25 second is defined as 360 degrees.

For details on [SCAN TYPE], see [HDV PROGRE.] (p. 83) or [DV PROGRE.] (p. 84).

Notes

- When you press the DATA CODE button, the shutter speed will be displayed in seconds regardless of the setting of this function.

Tips

- Shutter speed slower than 360° are displayed in multiples of 360°, such as 360° × 2.

LCD BRIGHT

You can adjust the brightness of the LCD screen. Changes in the LCD brightness will not affect the brightness of recording images.

Tips

- You can also turn off the LCD backlight (p. 17).

LCD COLOR

You can adjust the color level of the LCD panel. Changes in the LCD color level will not affect the color level of recording images.

LCD BL LEVEL

You can adjust the backlight level of the LCD screen.

►**NORMAL**

Standard brightness.

BRIGHT

Brightens the LCD screen.

Notes

- When you connect your camcorder to outside power sources, [LCD BL LEVEL] is automatically set to [BRIGHT].
- When you select [BRIGHT], the recordable time with the battery is slightly reduced.

VF B.LIGHT

You can adjust the brightness of the viewfinder.

►**NORMAL**

Standard brightness.

BRIGHT

Brightens the viewfinder screen.

Notes

- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.

• When you select [BRIGHT], the recordable time with the battery is slightly reduced.

VF COLOR

►ON

Displays images in the viewfinder in color.

OFF

Displays images in the viewfinder in black and white.

VF POWERMODE

►AUTO

Turns on the viewfinder while you close the LCD panel or record in mirror mode.

ON

Always turns on the viewfinder.

LETTER SIZE

►NORMAL

Displays the menu in regular letter size.

2x

Displays the selected menu items in letter size, the height of which is doubled.

REMAINING

►AUTO

Displays the remaining time of a tape for about 8 seconds in the following situation:

- When you set the POWER switch to VCR or CAMERA with a cassette inserted.
- When you press ► (Play) or the DISPLAY/BATT INFO button.

ON

Always displays the remaining time of a tape. The remaining time is not displayed when you insert a new tape or a tape that is rewound to the beginning. It is displayed when you start playback or recording.

DISP OUTPUT

You can select outputs to which display information, such as time code, is outputted.

►LCD PANEL

Outputs the information to the LCD screen and viewfinder.

V-OUT/PANEL

Outputs the information to the LCD screen, viewfinder and composite output.

ALL OUTPUT

Outputs the information to the LCD screen, viewfinder, HDMI output, component output and composite output.

Notes

• You cannot output display information, such as the time code, to an external device when [MARKER] is set to [ON].

(IN/OUT REC) menu

Recording settings, input and output settings (REC FORMAT/HDV PROGRE./ VIDEO OUT/EXT REC CTRL, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button→ select the (IN/OUT REC) with the SEL/PUSH EXEC dial.

REC FORMAT

You can select a recording format.

►**HDV1080i** (HDV1080i)
Records in the HDV1080i format.

DV (DVCAM DV SP)
Records in the DVCAM (DV) format.
Set also [DV REC MODE] when you record in this format (p. 84).

Notes

- Set also [i.LINK SET] as necessary when you output a movie to an external device through an i.LINK cable (p. 85).

VCR HDV/DV

You can select a type of output signal to an external device for playing back a movie on the device. Select [AUTO] in most cases. When you connect your camcorder to an external device with an i.LINK cable, select a type of input and output signals to and from the external device via the HDV/DV jack. You can record or play back a movie reproduced by the selected type of signals.

►**AUTO**
Automatically switches between HDV signals and DV signals during playback.
During the i.LINK connection, recognizes HDV signals and DVCAM (DV) signals, and automatically inputs or outputs the signals to or from the external device via the HDV/DV (i.LINK) jack for recording or playback.

HDV (HDV1080i)
Plays back only HDV format sections of a tape.
During the i.LINK connection, inputs or outputs only HDV signals to or from an external device via the HDV/DV (i.LINK) jack for recording or playback. Select this setting when you connect your camcorder to your computer.

DV (DVCAM DV SP)
Plays back only DVCAM (DV) format sections of a tape.
During the i.LINK connection, inputs or outputs only DVCAM (DV) signals to or from an external device via the HDV/DV (i.LINK) jack for recording or playback. Select this setting when you connect your camcorder to your computer.

Notes

- Make sure to disconnect the i.LINK cable prior to changing the setting. Otherwise, a video device may not recognize video signals.
- When you select [AUTO], images and sounds may be cut off on switching between HDV signals and DVCAM (DV) signals.
- When you set [i.LINK SET] → [HDV → DV CONV] to [ON], the following signals will be outputted:
  - [AUTO]: HDV signals are converted to DVCAM (DV) signals and outputted. DVCAM (DV) signals are outputted without any conversion.
  - [HDV]: HDV signals are converted to DVCAM (DV) signals and outputted. DVCAM (DV) signals will not be outputted.
  - [DV]: DVCAM (DV) signals are outputted without any conversion. HDV signals will not be outputted.

HDV PROGRE. HDV1080i

■ REC TYPE

You can select an HDV recording format from [INTERLACE] and

[PROGRESSIVE]. The default setting is [INTERLACE].

■ SCAN TYPE

You can select a scan type for recording in HDV format.

►50

Captures 50 fields per second in an interlace scan.

25

Captures 25 frames per second.

Notes

- Selectable [SCAN TYPE] settings differ depending on the setting of [REC TYPE].
  - [INTERLACE]: [50], [25]
  - [PROGRESSIVE]: [25]
- You can only play back a tape recorded with the [REC TYPE] set to [PROGRESSIVE] on a device that supports playback of a tape recoded by progressive scanning.

DV PROGRE. DVCAM DV SP

■ SCAN TYPE

You can select a scan type for recording in DVCAM/DV format.

►50

Captures 50 fields per second in an interlace scan.

25

Captures 25 frames per second.

DV REC MODE (DV Recording mode) DVCAM DV SP

This function is available only when you set [REC FORMAT] to [DV].

►DVCAM (DVCAM)

Records in the DVCAM format.

DV SP (DV SP)

Records in the SP (Standard Play) mode of the DV format to record for a longer time than in the DVCAM format.

Notes

- Mosaic-like disturbance or audio interruption may occur when you play back a movie recorded in the DV SP mode by another device.
- Image may be distorted or time code may not be properly connected between the scenes recorded in the DVCAM mode and DV SP mode.

DV WIDE REC DVCAM DV SP

You can record a movie in an aspect ratio that matches that of a TV that you want to connect. Refer also to the instruction manuals that come with the TV.

►ON

Records a movie in an aspect ratio that matches the full screen of a 16:9 (wide) TV.

OFF (4:3)

Records a movie in an aspect ratio that matches the full screen of a 4:3 TV.

Notes

- Set [DV WIDE CONV] correctly to suite a TV that you want to connect for playback (p. 84).
- The aspect ratio will be fixed to 16:9 and you cannot set it to 4:3 when you record in HDV format.

VIDEO OUT

■ COMPONENT

You can select [576i] or [1080i/576i] depending on your TV when you connect your camcorder to a TV via a component cable.

576i

Supports connection between your camcorder and a TV with a component input jack that supports the 576i format.

►1080i/576i

Supports connection between your camcorder and a TV with a component input jack that supports the 1080i format.

■ DOWN CONVERT

You can select a down convert type when you down-covert HDV signal to DV signal. Use this function for signals outputting from the following output jacks:

– Component (576i)
– S Video
– Audio/Video

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

LETTER BOX

Outputs an image with black bars added to the top and bottom of the original image, while maintaining the original aspect ratio.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

Notes

- When you view a movie recorded in the DVCAM (DV) format with [DV WIDE REC] set to [ON] on a standard 4:3 TV, images of the movie may appear vertically compressed. In such a case, set [DV WIDE CONV] to [LETTER BOX] or [EDGE CROP].

■ DV WIDE CONV

You can select a down convert type when you down-covert DV widescreen signal to DV signal.
Use this function for signals outputting from the following output jacks:

– Component (576i)
– S Video
– Audio/Video

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

LETTER BOX

Outputs an image with black bars added to the top and bottom of the original image, while maintaining the original aspect ratio.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

i.LINK SET

■ HDV → DV CONV

When you set this function to [ON], you can convert HDV format signals to DV format signals and output the DV format signals to an external device via the HDV/DV (i.LINK) jack. You can output DV format signals without any format conversion. The default setting is [OFF].

■ DOWN CONVERT

You can set a down convert type when you set [HDV → DV CONV] to [ON] to convert HDV format signals to DV format signals.

►SQUEEZE

Outputs a horizontally compressed image while maintaining its original height.

EDGE CROP

Outputs the central portion of the original image by cropping its right and left edges.

Notes

- For i.LINK connection, see [VCR HDV/DV] (p. 83).
- Disconnect the i.LINK cable before setting [i.LINK SET]. Otherwise, the connected video device may not be able to recognize the video signal from your camcorder.

EXT REC CTRL

You can connect your camcorder to an HDV/DVCAM/DV compatible device (digital HD video camera recorder, digital video camera recorder, hard disc recorder, etc.) with an i.LINK cable, and record movies on your camcorder and the connected device simultaneously, or continue recording from your camcorder to the connected device.
Refer also to the instruction manuals supplied with the connecting devices.

■ REC CTL MODE

►OFF

Does not record on a connected device.

Press the MENU button → select the (IN/OUT REC) with the SEL/PUSH EXEC dial.

SYNCHRONOUS (EXT)

Records movies, sound and time code on a connected device in synchronization with your camcorder.

RELAY (EXT)

Records movies, sound and time code on a connected device when a tape on your camcorder reaches close to the end during recording.

EXT ONLY (EXT)

You can operate an external recording unit* with the REC START/STOP button of your camcorder.

*HVR-MRC1(optional) or HVR-DR60 (optional)

Notes

- When this function is set to [EXT ONLY], does not flash even when there is no tape inserted.
- You can use the REC START/STOP button of your camcorder as a recording start/stop button for the external recording unit when you set this function to [EXT ONLY]. Use the REC button of the video control buttons (p. 134) to start recording on a tape or the STOP button to stop recording.
- EXT (EXT ONLY) flashes when you connect an external recording unit that is not supported by [EXT ONLY].

■ STBY COMMAND

►REC PAUSE

Stops recording operation of a connected device by putting it in pause when you stop recording operation of your camcorder.

STOP

Stops recording operation of a connected device when you stop recording operation of your camcorder.

00:00 (TC/UB SET) menu

(TC PRESET/UB PRESET/TC LINK, etc.)

The default settings are marked with ►. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button → select the 00:00 (TC/UB SET) with the SEL/PUSH EXEC dial.

TC PRESET

■ PRESET

You can preset the time code.

① Select [TC PRESET] with the SEL/PUSH EXEC dial.
② Select [PRESET] with the SEL/PUSH EXEC dial.
③ Select the first 2 digits with the SEL/PUSH EXEC dial.
You can set the time code between 00:00:00:00 and 23:59:59:29.
④ Set other digits by repeating step ③.
⑤ Select [OK] with the SEL/PUSH EXEC dial.

■ RESET

You can reset the time code (00:00:00:00). Select [RESET] in step ① of the [PRESET].

TC COUNTUP (AS)

You can increment the hour of time code by 1 and reset the minute, second and frame of time code when you execute this function.

Notes

- This function is available only when you set [TC MAKE] to [PRESET].

UB PRESET

■ PRESET

You can preset the user bit.

① Select [UB PRESET] with the SEL/PUSH EXEC dial.

② Select [PRESET] with the SEL/PUSH EXEC dial.
③ Select the first 2 digits with the SEL/PUSH EXEC dial.
④ Set other digits by repeating step ③.
⑤ Select [OK] with the SEL/PUSH EXEC dial.

■ RESET

You can reset the user bit (00 00 00 00). Select [RESET] in step ① of the [PRESET].

TC RUN

You can select how the time code advances.

►REC RUN

Advances the time code only during recording.

Select this setting to record the time code continuous from the last time code of the previous recording.

FREE RUN

Advances the time code regardless of operation of your camcorder.

Select this setting to save the actual time in the time code.

TC MAKE

►REGENERATE

Reads the last time code of the previous recording from the tape and records the new time code consecutively from the last time code during the backspace editing.

The time code runs in [REC RUN] mode regardless of the setting of [TC RUN].

PRESET

Records the newly set time code on the tape.

TC LINK

You can synchronize the time codes of multiple camcorders.
This function is useful for editing movies recorded by multiple camcorders.

① Insert a tape to the main camcorder from which you want to generate the time code.
② Set the POWER switches of the main and sub camcorders to CAMERA.
③ Connect the sub camcorder to the main camcorder with an i.LINK cable.
④ Set the main and sub camcorder as follows:
- Set [TC RUN] to [FREE RUN] (p. 87).
- Set [TC MAKE] to [PRESET] (p. 87).

Set the sub camcorders as follows:

⑤ Select [TC/UB SET] → [TC LINK] with the SEL/PUSH EXEC dial.
The message [Synchronize TC with connected device?] appears.
⑥ Select [YES] to synchronize the time code of the sub camcorder with that of the main camcorder. Disconnect the i.LINK cable from your camcorders when synchronization is completed. You can record with the synchronized time codes using those camcorders.

Notes

- If you want to execute [TC LINK] for more than two camcorders, repeat the steps for multiple sub camcorders with one main camcorder.
- Some frame shifting may occur over time after time code synchronization.
- Some frame shifting may occur if you turn the power off and back on. In such a case, set [TC LINK] again.

UB TIME REC

►OFF

Does not save the actual time in the user bit code.

ON

Saves the actual time in the user bit code.

UB-DATE/TC-TIME

You can save the date and time set in your camcorder in the user bit and time code, respectively, when you do this function.

Press the MENU button → select the (TC/UB SET) with the SEL/PUSH EXEC dial.

Notes

- This function is available in the following cases:
  - [TC MAKE] : [PRESET]
  - [TC RUN] : [FREE RUN]
  - [UB TIME REC] : [OFF]
- The time lag may occur between the set time code and the actual time as time goes on. Do [UB-DATE/TC-TIME] again prior to recording.
- The date saved in the user bit will not be automatically updated even when the actual date has been changed.

(MEMORY SET) menu

Settings for the "Memory Stick Duo" (ALL ERASE/FORMAT, etc.)

The default settings are marked with ▶. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button → select the (MEMORY SET) with the SEL/PUSH EXEC dial.

ALL ERASE

You can delete all the still images without image protection on a "Memory Stick Duo" or in the selected folder.

① Select [ALL FILES] or [CURRENT FLDR].
[ALL FILES]: Deletes all the images on the "Memory Stick Duo."
[CURRENT FLDR]: Deletes all the images in the currently selected folder.
② Select [YES] → [YES] with the SEL/PUSH EXEC dial.
[Erasing all data...] appears. [Completed.] appears when all unprotected images are deleted.

Notes

- Release the write protect tab on the "Memory Stick Duo" beforehand for the "Memory Stick Duo" with the write-protect tab (p. 119).
- The folder will not be deleted even when you delete all the images in the folder.
- Do not do any of the following while [Erasing all data...] is displayed:
  - Operate the POWER switch/buttons.
  - Eject the "Memory Stick Duo."

FORMAT

You do not need to format the "Memory Stick Duo" since it is already formatted at the factory. If you want to format the "Memory Stick Duo," select [YES]→[YES].

Notes

- Do not do any of the following while [Formatting…] is displayed:
  - Operate the POWER switch/buttons.
  - Eject the "Memory Stick Duo."
- Formatting erases everything on the "Memory Stick Duo" including protected image data and newly created folders.

FILE NO.

►SERIES

Assigns file numbers in sequence even if the "Memory Stick Duo" is replaced with another one. The file number is reset when a new folder is created or the recording folder is replaced with another.

RESET

Resets the file number to 0001 each time the "Memory Stick Duo" is changed.

NEW FOLDER

When you select [YES], you can create a new folder (102MSDCF to 999MSDCF) on a "Memory Stick Duo." When a folder is full (a maximum of 9,999 images are stored), a new folder is automatically created.

Notes

- You cannot delete the new folder once you have created it on your camcorder. Format the "Memory Stick Duo" (p. 88) or delete it on your computer.
- The number of recordable pictures on a "Memory Stick Duo" may decrease as the number of folders increases.

REC FOLDER (Recording folder)

You can select a folder in which you want to store still images.
Select the folder with the SEL/PUSH EXEC dial.

Tips

- The still images will be stored in the 101MSDCF folder by default.
- Once you store the still images in the current folder, the folder is selected as a playback folder.

PB FOLDER (Playback folder)

You can select a folder in which still images you want to view are stored.
Select the folder with the SEL/PUSH EXEC dial.

(OTHERS) menu

Settings while recording on a tape or other basic settings (QUICK REC/BEEP, etc.)

The default settings are marked with ▶. The indicators in parentheses appear when the items are selected.

See page 62 for details on selecting menu items.

Press the MENU button → select the (OTHERS) with the SEL/PUSH EXEC dial.

CAMERA PROF. (Camera profile)

You can save up to 99 camera setting profiles on a "Memory Stick Duo" and two profiles in your camcorder. Using these saved profiles let you quickly obtain suitable camera settings later. When using multiple camcorders of this model, you can save the setting on a "Memory Stick Duo" and load them into the other camcorders.

Tips

- You can save menu settings, picture profiles and button settings as a camera profile.

■ To load a camera profile

You can load a camera profile and use it on your camcorder.

① Select [LOAD] with SEL/PUSH EXEC dial.
② Select the camera profile that you want to load with the SEL/PUSH EXEC dial.
③ Select [YES] in the check screen.
Your camcorder is restarted and the selected camera profile becomes effective.

Notes

- You cannot load camera profile that has been saved by a different model of camcorder or edited on a computer.

■ To save a camera profile

① Select [SAVE] with the SEL/PUSH EXEC dial.
② Select [MEMORY STICK] with the SEL/PUSH EXEC dial to save the camera profile on the "Memory Stick Duo" or [CAMERA] to save it in your camcorder.
③ Select [NEW FILE] or an existing profile name with the SEL/PUSH EXEC dial.
④ Select [YES] in the check screen with the SEL/PUSH EXEC dial.
The camera profile is saved.

Tips

- When you select [NEW FILE] in [MEMORY STICK], a camera profile is saved as [MS01] the fist time you save a camera profile.
- When you select [NEW FILE] in [CAMERA], a camera profile is saved as [CAM1] or [CAM2].
- When you select an existing camera profile, the new camera profile is overwritten.
- You cannot view nor edit a camera profile saved on a "Memory Stick Duo" on your computer.
- You can save a camera profile on a "Memory Stick Duo" that has still image data.

■ To change the camera profile name

You can change the camera profile name.

① Select [PROFILE NAME] with the SEL/PUSH EXEC dial.
② Select the camera profile of which you want to change the name with the SEL/PUSH EXEC dial.
[PROFILE NAME] screen appears.
③ Change the profile name with the SEL/PUSH EXEC dial.

Tips

- You can enter the name in the same way as the picture profile (p. 41).

④ Select [OK] with the SEL/PUSH EXEC dial.
Profile name is changed.

■ To delete camera profile settings

① Select [DELETE] with the SEL/PUSH EXEC dial.
② Select the camera profile you want to delete with the SEL/PUSH EXEC dial.
③ Select [YES] on the check screen.

■ To copy a camera profile

You can copy camera profile saved on your camcorder to a "Memory Stick Duo."

① Select [COPY] with the SEL/PUSH EXEC dial.

② Select the camera profile that you want to copy with the SEL/PUSH EXEC dial.

③ Select [MEMORY STICK] or [CAMERA] for a "Memory Stick Duo" or your camcorder as a copy destination of the camera profile.

④ Select [NEW FILE] or an existing profile name with the SEL/PUSH EXEC dial.

⑤ Select [YES] on the check screen.

Tips

- You can copy a camera profile saved on a "Memory Stick Duo" to your camcorder.

ASSIGN BTN

See page 44.

CLOCK SET

See page 19.

WORLD TIME

When you use your camcorder abroad, you can adjust the clock to the local time by setting the time difference with the SEL/PUSH EXEC dial.
When you set the time difference to 0, the clock returns to the original setting.

LANGUAGE

You can select the language to be used on the LCD screen.

Tips

- Your camcorder offers [ENG[SIMP]] (simplified English) in case that you cannot find your native tongue among the options.

PB ZOOM (Playback zoom)

When you set this function to [ON], you can enlarge movie images about 1.1 to 5 times (still images about 1.5 to 5 times) with the handle zoom lever. The default setting is [OFF]. To end the zoom, press and hold the W side of the handle zoom lever until it stops.

Tips

- To move the zoom horizontally, press the SEL/PUSH EXEC dial, then turn the dial. To move the zoom vertically, press the SEL/PUSH EXEC dial one more time, then turn the dial.

QUICK REC HDV1080i

You can slightly reduce the recording start point time when resuming recording by changing the POWER switch from OFF to CAMERA.

► OFF

It takes some time to restart recording from the state that the drum has stopped rotating, but the transition from the last recorded scene is smooth.

ON (Q.REC)

The time shortens slightly until recording restarts from the state that the drum has stopped rotating, but the transition from the last recorded scene may not be smooth.
Select this when you do not want to miss a recording chance.

Tips

- When this function is set to [ON], the interval between scenes freezes for a moment (editing on your computer is recommended).
- When the camcorder is left in standby for more than about 3 minutes, your camcorder exits from standby (the drum stops rotating) to prevent tape wear and battery loss. Since the power does not turn off, you can restart recording by pressing the REC START/STOP button again.

DATE REC

► OFF

Does not superimpose the date and time on images.

ON

Superimposes the date and time on images.

Tips

- When [DV WIDE REC] is set to [OFF], the date and time are displayed outside the 4:3 area but properly recorded on images.
- When you record in the HDV format, the date and time are displayed at different positions during recording and playback.

BEEP

►OFF

Cancels the melody.

ON

Activates a melody when you start/stop recording.

REC LAMP[F] (Recording lamp [front])

When you set this function to [OFF], you can turn off the front camera recording lamp during recording. The default setting is [ON].

REC LAMP[R] (Recording lamp [rear])

When you set this function to [OFF], you can turn off the rear camera recording lamp during recording. The default setting is [ON].

REMOTE CTRL (Remote control)

When you set this function to [ON], you can use the supplied Remote Commander (p. 135). The default setting is [ON].

Tips

- Set to [OFF] to prevent your camcorder from responding to a command sent by another VCR remote control unit.

HOURS METER

You can display the cumulative operation time of your camcorder with the total hours of operation, drum rotation, tape running, or the total number of tape unthreading operations.

OPERATION

Displays the total hours of operation in 10-hour increments.

DRUM RUN

Displays the total hours of drum rotation in 10-hour increments.

TAPE RUN

Displays the total hours of tape running in 10-hour increments.

THREADING

Displays the total number of tape unthreading operation in 10-operation increments.

Dubbing to VCR, DVD/HDD device, etc.

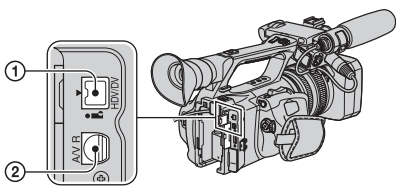
Connect your camcorder to the wall outlet (wall socket) using the supplied AC Adaptor/ Charger for this operation (p. 12). Refer also to the instruction manuals supplied with the devices to be connected.

Connecting to external devices

The connection method and the image quality will differ depending on the VCR, DVD/HDD device and the connectors used.

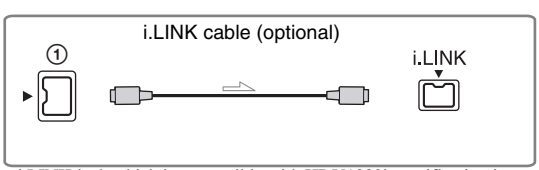
Jacks on your camcorder

Open the jack cover and connect the cable.

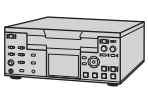


: Signal flow

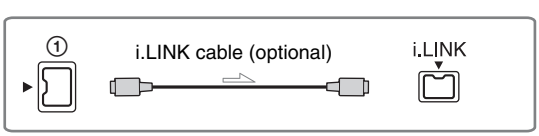
Camcorder	Cable	External device



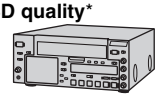
HDV1080i compatible device
→ **HD quality***

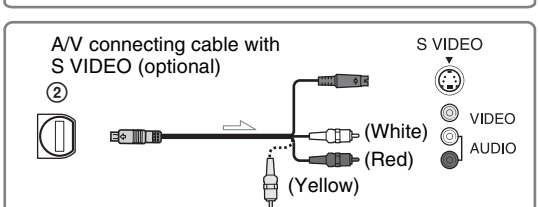


• i.LINK jack which is compatible with HDV1080i specification is required on the external device.



AV device with i.LINK jack
→ **SD quality***





AV device with S VIDEO jac
→ **SD quality***

: Signal flow

Camcorder	Cable	External device
② A/V connecting cable (supplied)	(Yellow) VIDEO (White) AUDIO (Red)	AV device with audio/video jacks** → **SD quality***

* Pictures recorded in the DVCAM (DV) format are dubbed in the SD (standard definition) quality, regardless of the connection.

** When connecting your camcorder to a monaural device, connect the yellow plug of the A/V connecting cable to the video jack on the device, and connect the white (left channel) or red (right channel) plug to the audio jack on the device.

Notes

• You cannot dub pictures using the HDMI cable.

Using an i.LINK cable (optional)

The dubbed format (HDV/DV) differs depending on the recording format or the format supported by the VCR/DVD device. See the table below for selecting the appropriate settings, and perform necessary menu setting.

Notes

• Disconnect the i.LINK cable before changing these menu settings, otherwise the VCR/DVD device may not correctly identify the video signal.

Tips

• This camcorder has a 4-pin i.LINK terminal. Select a cable that fits the terminal on the device to be connected.

Copy format	Camcorder recording format	Format supported by the VCR/DVD device		Menu setting	
		HDV format*1	DVCAM (DV) format	[VCR HDV/DV] (p. 83)	[i.LINK SET] (p. 85)
Copy HDV recording as HDV	HDV	HDV	–*3	[AUTO]	[OFF]
Convert HDV recording to DVCAM (DV)	HDV	DVCAM (DV)	DVCAM (DV)		[ON]
Copy DVCAM (DV) recording as DVCAM (DV)	DVCAM (DV)	DVCAM (DV)	DVCAM (DV)		[OFF]
When tape is recorded in both HDV and DVCAM (DV) format					
Convert both HDV and DVCAM (DV) format to DVCAM (DV)	HDV/ DVCAM (DV)	DVCAM (DV)	DVCAM (DV)	[AUTO]	[ON]
Copy only portions recorded in HDV format	HDV	HDV	–*3	[HDV]	[OFF]
	DVCAM (DV)	–*2	–*3		
Copy only portions recorded in DVCAM (DV) format	HDV	–*2	–*2	[DV]	[OFF]
	DVCAM (DV)	DVCAM (DV)	DVCAM (DV)		

*1 Recording device compliant with the HDV1080i specification.

*2 The tape advances, but no video or sound is recorded (blank).

*3 Picture is not recognized (no recording is made).

Notes

- When [VCR HDV/DV] is set to [AUTO], and the signal switches between HDV and DVCAM (DV) formats, the picture and sound are interrupted temporarily.
- When the recorder is HVR-Z5E/Z5P, set [VCR HDV/DV] to [AUTO] (p. 83).
- When the player and the recorder are both HDV1080i compatible devices such as HVR-Z5E/Z5P and connected with the i.LINK cable, after pausing or stopping and then resuming the recording, the images will be a bit choppy or rough at that point.
- Set [DISP OUTPUT] to [LCD PANEL] (the default setting) when connecting with an A/V connecting cable (p. 82).

When connecting with the A/V connecting cable with S VIDEO (optional)

Connect with S VIDEO jack instead of the video plug (yellow). This connection produces pictures more faithfully. This connection produces higher quality DVCAM (DV) format pictures. The audio will not be output when you connect with the S VIDEO cable alone.

Dubbing to another device

1 Prepare your camcorder for playback.

Insert the recorded cassette.
Slide the POWER switch to VCR.

Set [DOWN CONVERT]/[DV WIDE CONV] according to the playback device (TV, etc.) (p. 85).

2 Prepare your VCR/DVD device for recording.

When dubbing to the VCR, insert a cassette for recording.
When dubbing to the DVD recorder, insert a DVD for recording.

If your recording device has an input selector, set it to the appropriate input (such as video input1 and video input2).

3 Connect your VCR/DVD device to your camcorder as a recording device.

See page 93 for connection details.

4 Start playback on the camcorder, and recording on the VCR/DVD device.

Refer to the operating instructions supplied with your recording device for details.

5 When dubbing is complete, stop your camcorder and the VCR/DVD device.

Notes

- The following cannot be output via the i, HDV/DV interface (i.LINK):
  - Indicators
  - Titles that are recorded on other camcorders
- Pictures recorded in the HDV format are not output from the i, HDV/DV interface (i.LINK) jack during playback pause or in any playback mode other than normal playback.
- Note the following when connecting with an i.LINK cable:
  - The recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR/DVD device.
  - Data codes (date/time/camera settings data) may not be displayed or recorded depending on the device or application.
  - You cannot record the picture and sound separately.
- When dubbing to a DVD recorder from your camcorder through an i.LINK cable, you may not operate your camcorder on your DVD recorder even if its instruction manual says you can. If you can set the input mode to HDV or DV on your DVD recorder and can input/output pictures, follow the steps in “Using an i.LINK cable (optional).”

Tips

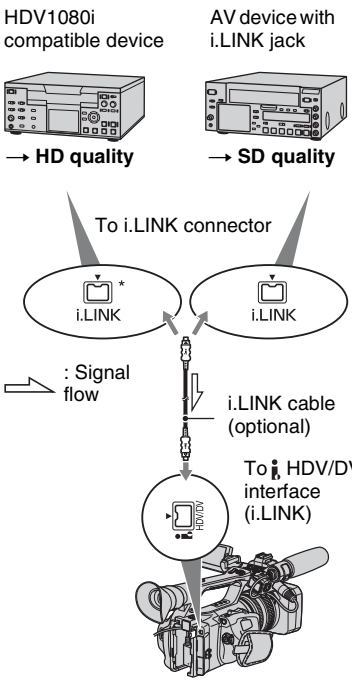
- To record the date/time and camera settings data when connected by the A/V connecting cable, display them on the screen.
- When you use an i.LINK cable, the video and sound signals are transmitted digitally, producing high quality pictures.
- When an i.LINK cable is connected, the format of the output signal (HDV OUT i.LINK or DV OUT i.LINK) will be indicated on the LCD screen of your camcorder.

Recording pictures from a VCR i.LINK

You can record pictures from a VCR on a tape. You can record a scene as a still image on a "Memory Stick Duo." You can record pictures in the HDV format by connecting an HDV1080i specification compatible device. Be sure to insert a cassette or a "Memory Stick Duo" for recording in your camcorder beforehand.
You can connect your camcorder to a VCR device using an i.LINK cable.
Connect your camcorder to the wall outlet (wall socket) using the supplied AC Adaptor/Charger for this operation (p. 12). Refer also to the instruction manuals supplied with the devices to be connected.

Notes

- You need an i.LINK cable for this operation.
- You cannot perform this operation with the A/V connecting cable.
- Your camcorder has a 4-pin i.LINK terminal. Select a cable that fits the terminal on the device to be attached.
- Your camcorder can only record from a PAL source. For example, French video or TV programs (SECAM) cannot be recorded correctly. See page 115 for details on TV color systems.



* An i.LINK jack which is compatible with HDV1080i specification is required.

Recording movies

1 Set the POWER switch to VCR.

2 Set the input signal of your camcorder.

Set [VCR HDV/DV] to [AUTO] when recording from an HDV format compatible device.

Set [VCR HDV/DV] to [DV] or [AUTO] when recording from a DVCAM (DV) format compatible device (p. 83).

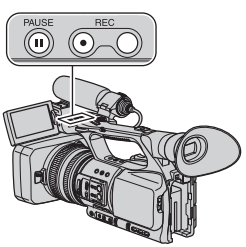
3 Connect your VCR as a player to your camcorder.

When an i.LINK cable is connected, the format of the input signal (HDV IN i.LINK or DV IN i.LINK) will be indicated on the LCD screen of your camcorder (This indicator may appear on the screen of the playback device but it will not be recorded).

4 Insert a cassette into the VCR.

5 Set your camcorder to recording pause.

While pressing II (PAUSE), press both ● REC (record) buttons simultaneously.



6 Start playing the cassette on your VCR.

The picture played on the VCR appears on the LCD screen of your camcorder.

7 Press II (PAUSE) again at the point you want to start recording.

8 Press ■ (STOP) to stop recording.

Notes

- You cannot record TV programs from the i, HDV/DV interface (i.LINK).
- User bits are not recorded when dubbing from a DVCAM (DV) device via an i.LINK cable.
- You can record pictures from DV devices only in the DVCAM (DV) format.
- Note the following when connecting with an i.LINK cable:
  - The recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR.
  - You cannot record the picture and sound separately.
  - If you pause or stop the recording and restart it, the picture may not be recorded smoothly.
- If video signals inputted to your camcorder via the i, HDV/DV jack experience the phenomenon of jittering (variation in frequency), that jittering is transmitted to the video signals outputted from the A/V remote connector. When you monitor a movie on a TV connected to your camcorder via the A/V remote connector, images may be distorted or not be displayed. Jittering will not affect recording of the movie on a tape with your camcorder but may affect recording of the movie with another VCR connected to your camcorder via the A/V remote connector.

Tips

- When a 4:3 video signal is input, it appears with black bands on the right and left sides on the screen of your camcorder.

Recording still images

Be sure to insert a “Memory Stick Duo” for recording in your camcorder and assign [PHOTO] to the ASSIGN 7/PHOTO button (p. 44) beforehand.

1 Perform steps 1 to 4 in “Recording movies.”

2 Start playing the cassette.

The pictures on the VCR appear on the screen of your camcorder.

3 Press the ASSIGN 7/PHOTO button on your camcorder or the PHOTO button on the Remote Commander at the scene you want to record.

Notes

- The image size is 1.2M when capturing a still image from a movie recorded and played back in the HDV format. The image size is 0.2M when capturing a still image from a movie recorded and played back in the DVCAM (DV) and widescreen (16:9) formats, or VGA (0.3M) when the movie is recorded and played back in the DVCAM (DV) and 4:3 formats.

Copying movies on a tape to a computer

Connect your camcorder to the computer with an i.LINK cable.
The computer needs to have an i.LINK connector and be installed with editing software that can copy video signals.
The software required depends on the format of the recorded pictures and the format for copying to the computer (HDV or DVCAM (DV)) as shown in the table below.

Recorded format	Format for copying to the computer	Required software
HDV	HDV	Editing software capable of copying HDV signal
HDV	DVCAM (DV)	Editing software capable of copying DVCAM (DV) signal
DVCAM (DV)	DVCAM (DV)	Editing software capable of copying DVCAM (DV) signal

Notes

- The i HDV/DV jack of your camcorder does not have a power-supply function.
- When you connect your camcorder to a computer via an i.LINK cable, make sure that the terminals of the i.LINK cable are placed the right way. Squeezing the terminals into jacks may damage the terminals and jacks, or result in a malfunction of your camcorder.
- You cannot copy image data stored on a “Memory Stick Duo” onto your computer via an i.LINK cable.
- Refer to the operating instructions of the software for the details on image copying.
- Refer to the operating instructions of the editing software for the recommended connection.
- Some editing software on the computer may not work correctly.
- You cannot change format DVCAM (DV) to HDV.

The required menu settings vary depending on the recorded images and the format

(HDV or DVCAM (DV)) to be copied to the computer.

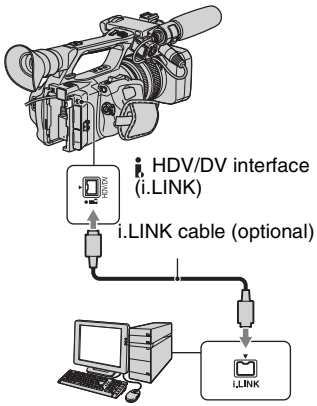
Recorded format	Format for copying to the computer	Menu setting*
HDV	HDV	[VCR HDV/DV] → [HDV] [i.LINK SET] → [HDV → DV CONV] → [OFF]
HDV	DVCAM (DV)	[VCR HDV/DV] → [HDV] [i.LINK SET] → [HDV → DV CONV] → [ON]
DVCAM (DV)	DVCAM (DV)	[VCR HDV/DV] → [DV] [i.LINK SET] → [HDV → DV CONV] → [OFF]

* See page 62 for menu settings.

Tips

- To copy HDV format images as they are without changing their format, an HDV compatible environment is required. For details, refer to your software instruction manual or contact the software manufacturer.
- To play movies by a regular DVD player, you need to create DVD video in the SD format. The DVD video is not in the HDV format.

Step:1 Connect an i.LINK cable



Notes on connecting to the computer

- Connect the i.LINK cable to the computer first, then to your camcorder. Connecting in the opposite order may cause static electricity to build up, resulting in a malfunction of your camcorder.
- The computer may freeze or may not recognize the signal from your camcorder in the following situations.
  - Connecting your camcorder to a computer that does not support the video signal formats appearing on the LCD screen of your camcorder display (HDV or DVCAM (DV)).
  - Changing [VCR HDV/DV] (p. 83) and [i.LINK SET] (p. 85) settings while connected with an i.LINK cable.
  - Changing [REC FORMAT] setting while connected with an i.LINK cable with the POWER switch set to CAMERA (p. 83).
  - Changing the POWER switch position while connected with an i.LINK cable.
- The format (HDV or DVCAM (DV)) of input/output signal appears on the LCD screen of your camcorder while connected with an i.LINK cable.

Step:2 Copying the movies

Use the supplied AC Adaptor/Charger to obtain AC power (p. 12).

① Prepare editing software (not provided).

② Turn on your computer.

③ Insert a tape into your camcorder and set the POWER switch to VCR.

④ Set the menu of your camcorder. The menu settings vary depending on the copying image.

⑤ Copy images to the computer with your software.

Notes

- If images are copied in HDV format but are not recognized, your editing software may not support HDV format. Convert the images to DVCAM (DV) format according to step ④ and copy again.
- A tape recorded in DVCAM (DV) format cannot be copied to a computer in HDV format.

Tips

- When images recorded in HDV format are copied to a computer, the file size is about 2GB (almost the same as a DV file) for a 10-minute movie if the video compression format is MPEG2.

When copying the movie in the HDV format from the computer to your camcorder

Set [VCR HDV/DV] to [HDV] and [HDV → DV CONV] of [i.LINK SET] to [OFF] (p. 83, 85).

Notes

- To copy an HDV format movie edited on a computer back onto a tape in HDV format is possible so long as your editing software supports copying HDV movies onto tape. For details, contact the software manufacturer.

When copying the movie in the DVCAM (DV) format from the computer to your camcorder

Set [VCR HDV/DV] to [DV] (p. 83).

Copying still images to a computer

System requirements

- For details on precautions and compatible application software, refer also to the operating instructions of the device to be connected.
- Required hardware: “Memory Stick Duo” slot, Memory Stick Reader/Writer compatible with “Memory Stick Duo.”

Copying the pictures

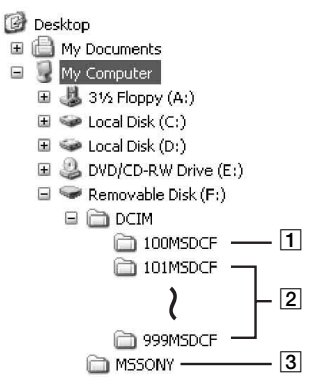
For Windows users

You can copy still images stored on a “Memory Stick Duo” to your computer via the “Memory Stick Duo” slot of your computer.

① Turn on your computer.

② Insert the “Memory Stick Duo” into the “Memory Stick Duo” slot of your computer.

③ Double-click the [Removable Disk] icon displayed in [My Computer]. Then, drag and drop a still image from the folder onto the hard disk drive of your computer.



1 Folder containing image files recorded by other camcorders without the folder creation function (for playback only).

2 Folder containing image files recorded by your camcorder when no new folders have been created, only [101MSDCF] is displayed.

3 Folder containing movie data recorded by other camcorders without the folder creation function (for playback only)

Folder	File	Meaning
101MSDCF (up to 999MSDCF)	DSC0□□ □□.JPG	Still image file

□□□□ are numbers between 0001 and 9999.

For Macintosh users

Double-click the drive icon, then drag and drop the desired picture file onto the hard disk of your computer.

Troubleshooting

If you run into any problems using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer.

• Power sources/LCD screen/Remote Commander···p. 103
• Cassette tapes/"Memory Stick Duo"···p. 104
• Recording···p. 105
• Playback···p. 108
• Connecting to TV···p. 110
• Dubbing/Editing/Connecting to other devices···p. 111
• Connecting to a computer···p. 112

Power sources/LCD screen/Remote Commander

The power does not turn on or abruptly turns off.

- Attach a charged battery pack to the camcorder (p. 12).
- Use the AC Adaptor/Charger to connect to a wall outlet (wall socket) (p. 12).

The camcorder does not operate even when the power is set to on.

- Disconnect the AC Adaptor/Charger from the wall outlet (wall socket) or remove the battery pack, then reconnect it after about 1 minute.
- Press the RESET button (p. 134) using a sharp-pointed object.

The camcorder gets warm.

- The camcorder may get warmer while you use it. This is not a malfunction.

The remaining battery time indicator does not indicate the correct time.

- Ambient temperature is too high or too low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 12, 120).
- The indicated time may not be correct in certain circumstances. For example, when you open or close the LCD panel, it takes about 1 minute to display the correct remaining battery time.

The battery pack discharges too quickly.

- Ambient temperature is too high or low, or the battery pack has not been charged enough. This is not a malfunction.
- Fully charge the battery again. If the problem persists, the battery may be worn-out. Replace it with a new one (p. 12, 120).

The picture remains on the LCD screen.

- This occurs if you disconnect the DK-415 cable or remove the battery pack without turning off the power first. This is not a malfunction.

The picture in the viewfinder is not clear.

- Move the viewfinder lens adjustment lever until the picture appears clearly (p. 17).

The picture in the viewfinder has disappeared.

- If you change [VF POWERMODE] to [AUTO], the finder light remains off while the LCD panel is open (p. 81).

The supplied Remote Commander does not function.

- Set [REMOTE CTRL] to [ON] (p. 92).
- Remove any obstructions between the Remote Commander and the remote sensor.
- Keep strong light sources, such as sunlight or overhead lighting, away from the remote sensor, otherwise the Remote Commander may not function properly.
- Insert a fresh battery in the compartment with its +/– terminals matching those of the compartment (p. 135).

Another VCR malfunctions when you use the supplied Remote Commander.

- Select a commander mode other than VTR 2 for your VCR.
- Cover the sensor of your VCR with black paper.

Cassette tapes/"Memory Stick Duo"

The cassette cannot be ejected from the compartment.

- Make sure the power source (battery pack or AC Adaptor/Charger) is connected correctly (p. 12).
- Moisture condensation has occurred inside the camcorder (p. 123).

The Cassette Memory indicator or title display does not appear while using a cassette with the Cassette Memory function.

- This camcorder does not support the Cassette Memory function, so the indicator does not appear.

The remaining tape indicator is not displayed.

- Set [REMAINING] to [ON] to always display the remaining tape indicator (p. 82).

The cassette is noisier during rewinding or fast-forwarding.

- When using the DK-415 cable rewind/fast forward speed increases (compared with battery operation) and therefore increases noise. This is not a malfunction.

You cannot delete pictures on a "Memory Stick Duo."

- The pictures are protected. Release the protect function on your computer, etc.

Recording

The recording does not start when you press the REC START/STOP button.

- Slide the POWER switch to CAMERA (p. 23).
- The tape has reached the end. Rewind it, or insert a new cassette.
- Set the write-protect tab of the cassette to REC or insert a new cassette (p. 116).
- The tape is stuck to the drum due to moisture condensation. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 123).
- Set [REC CTL MODE] of [EXT REC CTRL] to other than [EXT ONLY] (p. 85).

The handle zoom does not work.

- Set the handle zoom speed switch to FIX or VAR (p. 26).

You cannot record on the "Memory Stick Duo."

- The "Memory Stick Duo" is full. Delete unnecessary pictures recorded on the "Memory Stick Duo" (p. 119).
- Format the "Memory Stick Duo" on your camcorder (p. 88) or insert another "Memory Stick Duo" (p. 21).
- You cannot record still images on the "Memory Stick Duo" in the following cases.
  – While executing [FADER]
  – While executing [SMTH SLW REC]
  – When and the shutter speed is slower than 1/50
  – While using shot transition
- Assign [PHOTO] to the ASSIGN 7/PHOTO button or any one of the ASSIGN buttons.

You cannot record a smooth transition on a tape from the last recorded scene to the next.

- Do not record progressive pictures in different [REC TYPE] settings on the same tape.
- Perform End search (p. 46).
- Do not remove the cassette (the picture will be recorded continuously without a break even when you turn the power off).
- Do not record pictures in the HDV and DVCAM (DV) formats on the same tape.
- Do not record pictures in DVCAM mode and DV SP mode on the same tape. DVCAM DV
- When [QUICK REC] is set to [ON], you cannot record a smooth transition (p. 91). HDV1080i

The shutter sound is not heard when you record a still image.

- Set [BEEP] to [ON] (p. 92).
- No shutter sound will be outputted during movie recording or while an external device is connected.

End search or last scene review does not work.

- Do not eject the cassette after recording (p. 46).
- There is nothing recorded on the cassette.
- There is a blank section between recorded sections of the tape. This is not a malfunction.

Automatic focus does not function.

- Set the FOCUS switch to AUTO to enable the automatic focus function (p. 27).
- Adjust the focus manually if the automatic focus does not work properly (p. 28).

Menu items are grayed out or do not work.

- You cannot select grayed out display items in the current recording/playback situation.
- There are some functions you cannot activate simultaneously. The following list shows examples of unworkable combinations of functions and menu items.

Cannot use	Situation
[BACK LIGHT], [SPOTLIGHT]	Two or more of iris, gain, and shutter speed are set manually. [IRIS/EXPOSURE] is set to [EXPOSURE] and image brightness is adjusted with the iris ring [HYPER GAIN] is set to [ON].
[CNTRST ENHCR]	[BACK LIGHT] is set to [ON].
[FADER]	No tape is inserted. Moisture condensation has occurred inside the camcorder. The write-protect tab on the cassette is set to SAVE.
[ZEBRA], [PEAKING], [CAM DATA DSP], [HISTOGRAM]	[COLOR BAR] is set to [ON].
[SMTH SLW REC]	[REC TYPE] of [HDV PROGRE.] is set to [PROGRESSIVE]. [REC TYPE] of [HDV PROGRE.] is set to [INTERLACE] and [SCAN TYPE] is set to [25]. [SCAN TYPE] of [DV PROGRE.] is set to [25]. [REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY]. [COLOR BAR] is set to [ON].
[MARKER]	[DATE REC] is set to [ON].
[LCD BL LEVEL], [VF B.LIGHT]	AC power source is being used.
[TC LINK]	Your camcorder is not connected to an external device via an i.LINK cable.
[TC COUNTUP]	[TC MAKE] is set to [REGENERATE].
[UB-DATE/TC-TIME]	[TC MAKE] is set to [REGENERATE]. [TC RUN] is set to [REC RUN]. [UB TIME REC] is set to [ON]. Date and time are not set.

Cannot use	Situation
[WORLD TIME], [DATE REC]	Date and time are not set.
[x.v.Color]	[REC FORMAT] is set to [DV].
[ECS FREQ.]	The shutter speed is not set to the ECS.
[INTERVAL REC]	[REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY]. [REC TYPE] of [HDV PROGRE.] is set to [PROGRESSIVE]. [REC TYPE] of [HDV PROGRE.] is set to [INTERLACE] and [SCAN TYPE] is set to [25]. [SCAN TYPE] of [DV PROGRE.] is set to [25].
[DV FRAME REC]	[REC CTL MODE] of [EXT REC CTRL] is set to [EXT ONLY]. When [REC FORMAT] is set to [HDV1080i]
[EXT REC CTRL]	[INTERVAL REC] is set to [ON]. [DV FRAME REC] is set to [ON].

Shutter speed, gain, white balance or iris cannot be adjusted manually.

- Set the AUTO/MANUAL switch to MANUAL.

Tiny spots in white, red, blue, or green appear on the screen.

- This phenomenon appears when using a slow shutter speed (p. 30). This is not a malfunction.

The subjects passing by the frame very fast appear crooked.

- This is called the focal plane phenomenon. This is not a malfunction. Because of the way that the image device (CMOS sensor) reads out image signals, the subjects passing by the frame rapidly might appear crooked depending on the recording conditions.

The screen picture is bright, and the subject does not appear on the screen.

- Set [BACK LIGHT] to [OFF].
- Set [HYPER GAIN] to [OFF].

The screen picture is dark, and the subject does not appear on the screen.

- Press and hold the DISPLAY/BATT INFO button for a few seconds to turn on the backlight (p. 17).

Horizontal stripes appear on the image.

- This occurs when recording pictures under a fluorescent lamp, sodium lamp, or mercury lamp. This is not a malfunction. This can be improved by changing the shutter speed (p. 30).

Black bands appear when you record a TV screen or computer screen.

- This can be improved by adjusting the shutter speed in the extended clear scan (ECS) range (p. 30).

Fine patterns flicker, diagonal lines look jagged.

- Adjust [DETAIL] to the negative side (p. 39).

Playback

If you are playing back pictures stored on a "Memory Stick Duo," refer also to the Cassette tapes/"Memory Stick Duo" section (p. 104).

You cannot play back tape.

- Slide the POWER switch to VCR.
- Rewind the tape (p. 49).

Image data stored on a "Memory Stick Duo" cannot be played back correctly.

- Image data cannot be played back if you have modified file names or folders, or have edited the data on a computer (In this case, the file name flashes). This is not a malfunction (p. 120).
- Pictures recorded on other devices may not be played back correctly. This is not a malfunction.

The data file name is displayed incorrectly, or flashing.

- The file is damaged.
- The file format is not supported on your camcorder (p. 116).
- Only the file name is displayed if the folder structure does not conform to the universal standard.

Horizontal lines appear on the picture. The displayed pictures are not clear or do not appear.

- Video head is dirty. Clean the head using the cleaning cassette (optional) (p. 124).

You cannot hear the sound recorded with 4CH microphone recording on another camcorder.

- Set [DV AUDIO MIX] for the DVCAM (DV) format 4-ch recording (p. 77).
- You cannot reproduce the sound recorded in CH3 and CH4 on your camcorder for the HDV format 4-ch recording.

No sound or only a low sound is heard.

- Turn up the volume (p. 50).
- Set [DV AUDIO MIX] (p. 77).
- Pictures recorded using [SMTH SLW REC] do not have sounds.

The picture or sound breaks off.

- The tape was recorded in both of the HDV and DVCAM (DV) formats. This is not a malfunction.

The movies freeze for a while, or the sound breaks off.

- This occurs if the tape or video head is dirty (p. 124).
- Use the Sony mini DV cassette tape.

"---" is displayed on the screen.

- The tape you are playing back was recorded without setting the date and time.
- A blank section on the tape is being played back.
- The data code on a tape with a scratch or noise cannot be read.
- A movie recorded in the extended clear scan (EOS) range is being played back.
- The tape you are playing was recorded with the gain set to -6dB.
- The tape you are playing was recorded with [HYPER GAIN] set to [ON].

Noises appear and NTSC or 60i is displayed on the screen.

- The tape was recorded in a TV color system other than that of your camcorder (PAL). This is not a malfunction.

Date Search does not work correctly.

- Be sure to record more than 2 minutes after the date changed. If one day's recording is too short, your camcorder may not accurately find the point where the recording date changes.
- There is a blank section between recorded sections of the tape. This is not a malfunction.

No picture appears during End search, Rec review or Last scene review.

- The tape was recorded in both HDV and DVCAM (DV) formats. This is not a malfunction.

New sound added to a recorded tape on another camcorder is not heard.

DVCAM DV

- Set [DV AUDIO MIX] from [CH1,CH2] (original sound) to [MIX] or [CH3,CH4] (p. 77).

2/2-ST appears on the LCD screen.

- This appears when you play back a tape recorded on other recording devices using a 4ch microphone. This camcorder does not comply with the 4ch microphone recording standard.

Connecting to TV

You cannot view the picture on the TV connected with the i.LINK cable.

- You cannot view the picture in the HD (high definition) quality on the TV if an i.LINK jack of the TV is not compatible with the HDV1080i specification (p. 56). Refer to the instruction manuals supplied with your TV.
- Down convert the pictures recorded in HDV format and play back in DVCAM (DV) format (SD image quality) (p. 85).
- Connect the TV with another connecting cable, and play back pictures (p. 56).

You cannot hear the sound on the TV connected with the S VIDEO plug (S VIDEO channel) or component video plugs.

- If you are using an S VIDEO plug or component video plugs, make sure the red and white plugs are also connected (p. 56).

You cannot view the picture or hear the sound on the TV connected with the component A/V cable.

- Set [COMPONENT] according to the requirements of the connected device (p. 84).
- When you are using the component A/V cable, make sure the red and white plugs are connected (p. 56).

You cannot view the picture or hear the sound on the TV connected with the HDMI cable.

- Pictures in the HDV format are not output from the HDMI OUT jack, if copyright protection signals are recorded in the pictures.
- DVCAM (DV) format pictures input to the camcorder via i.LINK cable (p. 97) cannot be output.
- This occurs if you record on a tape in both HDV and DVCAM (DV) formats. Disconnect and connect the HDMI cable, or slide the POWER switch to turn on your camcorder again.

The picture appears distorted on the 4:3 TV.

- This happens when viewing a picture recorded in 16:9 (wide) mode on a 4:3 TV. Select the down conversion type from one of the following menus, depending on the recording format.
  – If the recording format is HDV, select from [DOWN CONVERT] in [VIDEO OUT] (p. 85).
  – If the recording format is DVCAM (DV), select from [DV WIDE CONV] in [VIDEO OUT] (p. 85)

Black zone appears at top and bottom of a 4:3 TV screen.

- This happens when viewing a picture recorded in the 16:9 (wide) mode on a 4:3 TV. This is not a malfunction.

Dubbing/Editing/Connecting to other devices

Pictures from connected devices cannot be zoomed.

- You cannot zoom pictures from connected devices on your camcorder.

Time code and other information appear on the display of the connected device.

- Set [DISP OUTPUT] to [LCD PANEL] while connected with an A/V connecting cable (p. 82).

You cannot dub correctly using the A/V connecting cable.

- The A/V connecting cable is not connected properly.
  Make sure that the A/V connecting cable is connected to the input jack of the other device for dubbing a picture from your camcorder.

When connected using an i.LINK cable, no picture appears on the monitor screen during dubbing.

- Set [VCR HDV/DV] according to the requirements of the connected device (p. 83).

You cannot add sound to the recorded tape.

- You cannot add sound to the recorded tape on this unit.

You cannot dub correctly using the HDMI cable.

- You cannot dub pictures using the HDMI cable.

When you copy a movie shot in wide (16:9) format using an i.LINK cable, the screen stretches vertically.

- You cannot output the aspect ratio setting using an i.LINK cable. Set the aspect ratio of the TV instead.
- Connect using an A/V connecting cable instead.

Connecting to a computer

The computer does not recognize your camcorder.

- Disconnect the cable from the computer, then connect it again securely.
- Disconnect the cable from the computer, restart the computer, then connect the computer to your camcorder correctly.

You cannot view or copy a movie recorded on a tape to a computer.

- Disconnect the cable from the computer, then connect it again.
- You need the editing software (optional) to copy a movie recorded on a tape to your computer (p. 99).

Your computer freezes.

- Set [VCR HDV/DV] correctly according to the connected device (p. 83).
- Disconnect the cable from your computer and camcorder. Reboot your computer, and connect your computer and camcorder following the steps in the correct order (p. 100).

Warning indicators and messages

Self-diagnosis display/Warning indicators

When an error occurs, a warning indicator appears on the LCD screen or in the viewfinder.
You can fix some problems associated with the symptoms yourself. If the problem persists even after you have tried a couple of times, contact your Sony dealer or local authorized Sony service facility.

C:(or E:) □□:□□ (Self-diagnosis display)

C:04:□□

- The battery pack is not an "InfoLITHIUM" battery pack. Use an "InfoLITHIUM" battery pack (p. 120).

C:06:□□

- The battery pack is too hot. Replace the battery pack, or remove it and put it in a cool place.

C:21:□□

- Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour, then re-insert the cassette (p. 123).

C:22:□□

- Clean the head using a cleaning cassette (optional) (p. 124).

C:31:□□ / C:32:□□

- Symptoms that are not described above have occurred. Remove and insert the cassette, then operate your camcorder again. Do not perform this procedure if moisture condensation has occurred (p. 123).
- Remove the power source. Reconnect it and operate your camcorder again.
- Change the cassette. Press the RESET button (p. 134), and operate your camcorder again.

E:61:□□ / E:62:□□

- Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from "E."

101-1001(Warning indicator pertaining to files)

- The file is damaged.
- The file is unreadable (p. 120).

(Battery level warning)

- The battery pack is nearly used up.
- Depending on the operating, environment, or battery conditions, may flash, even if there are approximately 5 to 10 minutes remaining.

(Warning indicator pertaining to battery pack temperature)

- The battery pack is too hot. Replace the battery pack, or remove it and put it in a cool place.

(Moisture condensation warning)*

- Eject the cassette, remove the power source, and then leave it for about 1 hour with the cassette lid open (p. 123).

(Warning indicators pertaining to the tape)

Slow flashing:

- There is less than 5 minutes remaining on the tape.
- No cassette is inserted.*
- The write-protect tab on the cassette is set to lock (p. 116).*

Fast flashing:

- The tape has run out.*

⏏ (Eject cassette warning)*

Slow flashing:

- The write-protect tab on the cassette is set to lock (p. 116).

Fast flashing:

- Moisture condensation has occurred (p. 123).
- The self-diagnosis display code is displayed (p. 113).

* When [BEEP] is set to [ON] (p. 92), you hear a melody when the warning indicators appear on the screen.

Warning messages

If messages appear on the screen, follow the instructions.

Using your camcorder abroad

Power supply

You can use your camcorder in any country/region using the AC Adaptor/ Charger supplied with your camcorder within the AC 100 V to 240 V, 50/60 Hz range.

On TV color systems

Your camcorder is PAL system, so its picture can only be viewed on a PAL system TV with an AUDIO/VIDEO input jack.

System	Used in
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay.
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

Viewing HDV format pictures recorded in HDV format HDV1080i

You need an HDV1080i compatible TV (or monitor) with a component jack and AUDIO/VIDEO input jack or an HDMI jack. You also need a component A/V cable (supplied) or an HDMI cable (optional).

Viewing DVCAM (DV) format pictures recorded in DVCAM (DV) format DVCAM DV

You need a TV with the AUDIO/VIDEO input jack. A connecting cable is also needed.

Simple setting of the clock by time difference

When you are abroad, you can easily adjust the clock to the local time by setting the time difference. Select [WORLD TIME], then set the time difference (p. 91).

Maintenance and precautions

HDV format and recording/ playback

Your camcorder is capable of recording in HDV/DVCAM/DV formats.
It is recommended to use a cassette with the Mini DV mark to record in the HDV/ DVCAM/DV format.
It is recommended to use a cassette with the DVCAM mark to record in the DVCAM format.
Your camcorder is not compatible with the Cassette Memory function.

What is the HDV format?

The HDV format is a video format developed to record and play back digital high definition (HD) video signals on a DV cassette.
Your camcorder adopts the Interlace mode with 1,080 effective scan lines of screen ruling (1080i, number of pixels 1,440 × 1,080 dots).
The video bit rate for recording is about 25 Mbps.
i.LINK is adopted for the digital interface, enabling a digital connection with an HDV compatible TV or computer.

- HDV signals are compressed in MPEG2 format, which is adopted in BS (broadcast satellite) digital, terrestrial digital HDTV broadcastings, in Blu-ray Disc recorders, etc.

Playback

- Your camcorder can play back pictures in both the DVCAM (DV) format and HDV1080i specification.
- Your camcorder can play back pictures recorded in the HDV 720/30p format, but cannot output it from the i.LINK HDV/DV interface (i.LINK).

To prevent a blank section from being created on the tape

Go to the end of the recorded section using [END SEARCH] (p. 46) before you begin the next recording when you have played back the tape.

Copyright signal

■ When you play back
If the cassette you play back on your camcorder contains copyright signals, you cannot copy it to a tape in another video camera connected to your camcorder.

■ When you record
You cannot record software on your camcorder that contains copyright control signals for copyright protection of software. [Cannot record due to copyright protection.] appears on the LCD screen, or on the viewfinder if you try to record such software. Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

The DVCAM format has 2 audio modes. You cannot dub sound onto a recorded tape with your camcorder.

■ FS32K (12-bit) mode
The original sound is recorded in channels 1 and 2, and the new sound in channels 3 and 4. The balance between channels 1/2 and channels 3/4 can be adjusted by selecting [DV AUDIO MIX] in the menu settings during playback. If you select [MIX], the sounds of channel 1/2 and channel 3/ 4 are synthesized to be output.

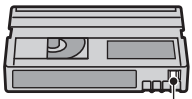
■ FS48K (16-bit) mode
The original sound can be recorded in high quality using 2 channels. The audio mode can be indicated on the LCD screen or in the viewfinder.

Notes on use

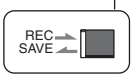
■ When not using your camcorder for a long time
Remove the cassette and store it.

■ To prevent accidental erasure

Slide the write-protect tab on the cassette to set it to SAVE.

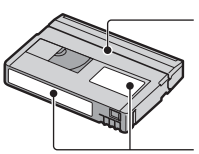


REC: The cassette can be recorded.
SAVE: The cassette cannot be recorded (write-protected).



■ When labeling the cassette

Be sure to place the label only on the locations shown in the following illustration so as not to cause a malfunction of your camcorder.

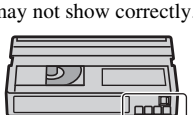


■ After using the cassette

Rewind the tape to the beginning to avoid distortion of the picture or the sound. The cassette should then be put in its case, and stored in an upright position.

■ When cleaning the gold-plated connector

Generally, clean the gold-plated connector on a cassette with a cotton-wool swab after every 10 times it has been ejected.
If the gold-plated connector on the cassette is dirty or dusty, the remaining tape indicator may not show correctly.



Gold-plated connector

On Sony HDV1080i compliant TVs

HDV1080i

An HDV format compatible TV with the component input jack is required to view playback pictures recorded in the HDV format.

Compatibility of the DVCAM/DV formats

The DVCAM format was developed as a more reliable and higher-end format than the consumer DV format. Explained here are the differences, compatibility, and limitations on editing for the DVCAM and DV formats. **NS** appears when the DVCAM standard is not met.

Differences between the DVCAM and DV formats

Specification	DVCAM	DV
TRACK Pitch	15 µm	10 µm
Audio sampling frequency	12 bit:32 kHz 16 bit:48 kHz	12 bit:32 kHz 16 bit:48 kHz 44.1 kHz 48 kHz
Audio recording mode*	Lock mode	Lock/Unlock mode

* There are 2 modes for audio recording, lock mode and unlock mode. In lock mode, the sampling frequencies of audio and video are synchronized. Therefore, lock mode is more effective than unlock mode in digital processing and smooth transition during audio editing.

Mini DVCAM and mini DV cassettes

The recording format of the picture is defined according to the recorder's format as described below.

Recorder's format	Cassette's format	Recording format
DVCAM	DVCAM DV	DVCAM
DV	DVCAM DV	DV

Notes

- This camcorder complies with the DVCAM format.Though mini DV cassettes can be used for recording, we recommend you use mini DVCAM cassettes to get the most out of the high reliability of the DVCAM format.
- The recording time of mini DV cassettes is 1/3 shorter than that indicated on mini DV cassettes when recorded in the DVCAM format.

Compatibility on playback

Tape	On DV video equipment	On DVCAM video equipment
DV formatted	Can be playback	Can be played back only when recorded in SP mode
DVCAM formatted	Can be played back on some equipment	Can be playback

Compatibility on editing using DV jacks

When this camcorder is connected to other digital video equipment using an i.LINK cable, the recording format of edited tapes is defined according to the source tape and the recorder's format as described below. Playback or editing using the edited tape may be limited depending on dubbing operation. Start dubbing after reading "Limitations on editing" (p. 119).

Source tape	Player's format	Recorder's format	Recording format
DV formatted (SP mode only)	DVCAM	DVCAM	DVCAM [1]
		DV	DV
DV formatted	DV	DVCAM	DVCAM
		DV	DV
DVCAM formatted [2]	DVCAM	DVCAM	DVCAM
		DV	DV
DVCAM formatted [2]	DV [3]	DVCAM	DVCAM (Compatibility depends on models.)
		DV	DV

[1] When using mini DVCAM video equipment to perform DV dubbing of a tape recorded in DV format, the tape produced will be in the DVCAM format which the time code format will be partly misadjusted. (there will be no effect on the recorded picture except in certain cases.)

[2] If the tape that is to be dubbed is in the DVCAM format as in 1), the tape produced will be in the DVCAM format and the time code format will be partly misadjusted.

[3] Some mini DV video equipment may be able to play back a DVCAM-formatted tape. Even if the tape is played back, quality of the playback cannot be guaranteed. The time code format will be partly misadjusted.

Notes

- If you use tapes as in 1) to 3) above for editing, the functions may be limited regardless of the format of players and recorders.

Limitations on editing

You may find the following limitations when editing a tape produced by dubbing or editing using the HDV/DV Interface (i.LINK) jack:

- Due to the difference in track pitch, you cannot record or edit on DV-formatted tapes using mini DVCAM video equipment.
- Depending on the DVCAM video equipment used, you may not be able to edit DVCAM formatted tapes if the audio recording mode is unlock mode. In this case, dub using audio/video jacks.

About the "Memory Stick"

A "Memory Stick" is a compact, portable IC recording medium with a large data capacity.
You can use the following types of "Memory Stick" listed below on the camcorder. However, we do not guarantee the operation of all types of "Memory Stick" on your camcorder. (See the list below for more details.)

Types of "Memory Stick"	Recording /Playback
"Memory Stick Duo" (with MagicGate)	○
"Memory Stick PRO Duo"	○
"Memory Stick PRO-HG Duo"	○

- This product does not support high speed data transfer via a parallel interface.
- This product cannot record or play data that uses "MagicGate" technology. "MagicGate" is a copyright protection technology that records and transfers the contents in an encrypted format.
- This product is compatible with "Memory Stick Micro" ("M2"). "M2" is the abbreviation for the "Memory Stick Micro."
- Still image format: Your camcorder compresses and records image data in the JPEG (Joint Photographic Experts Group) format. The file extension is ".JPG."
- A "Memory Stick Duo" formatted by a computer (Windows OS/Mac OS) does not have guaranteed compatibility with your camcorder.
- Data read/write speed may vary depending on the combination of the "Memory Stick Duo" and "Memory Stick Duo" compliant product you use.
- You can prevent accidental erasure of images when you slide the write-protect tab on the "Memory Stick Duo" with a small tapered object, to the write-protect position.
- Damaged or lost image data will not be compensated for, and may occur in the following cases:
  - If you eject the "Memory Stick Duo," turn the power off on your camcorder, or remove the battery pack for replacement while your camcorder is reading or writing image files on the "Memory Stick Duo" (while the access lamp is lit or flashing).
  - If you use the "Memory Stick Duo" near magnets or magnetic fields.
- It is recommended to make a back-up of important data on the hard disk of a computer.
- Be careful not to apply excessive force when writing on a memo area on a "Memory Stick Duo."
- Do not attach a label or the like on a "Memory Stick Duo" or a "Memory Stick Duo" adaptor.
- When you carry or store a "Memory Stick Duo," put it in its case.
- Do not touch, or allow metallic objects to come into contact with the terminals.
- Do not bend, drop or apply strong force to the "Memory Stick Duo."
- Do not disassemble or modify the "Memory Stick Duo."
- Do not let the "Memory Stick Duo" get wet.
- Be careful to keep "Memory Stick Duo" media out of the reach of small children. There is danger that a child might swallow it.
- Do not insert anything other than a "Memory Stick Duo" into the "Memory Stick Duo" slot. Doing so may cause a malfunction.
- Do not use or keep the "Memory Stick Duo" in the following locations:
  - Places subject to extremely high temperature, such as a car parked outside in the summer.
  - Places under direct sunlight.

– Places with extremely high humidity or subject to corrosive gases.

■ On the “Memory Stick Duo” adaptor

- When using a “Memory Stick Duo” with a “Memory Stick” compliant device, make sure to insert the “Memory Stick Duo” into a “Memory Stick Duo” adaptor.
- When inserting a “Memory Stick Duo” into a “Memory Stick Duo” adaptor, make sure the “Memory Stick Duo” is inserted facing in the correct direction, then insert it all the way in. Note that improper use may cause a malfunction. Also, if you force the “Memory Stick Duo” into the “Memory Stick Duo” adaptor in the wrong direction, it may be damaged.
- Do not insert a “Memory Stick Duo” adaptor without a “Memory Stick Duo” attached. Doing so may result in malfunctions of the unit.

■ On a “Memory Stick PRO Duo”

- The maximum memory capacity of a “Memory Stick PRO Duo” that can be used on your camcorder is 16 GB.
- This unit does not support high speed data transfer.

Notes on using “Memory Stick Micro”

- To use a “Memory Stick Micro” with the camcorder, you need a Duo-sized M2 Adaptor. Insert the “Memory Stick Micro” into the Duo-sized M2 Adaptor, then insert the adaptor into the “Memory Stick Duo” slot. If you insert a “Memory Stick Micro” into the camcorder without using a Duo-sized M2 Adaptor, you might not be able to remove it from the camcorder.
- Do not leave the “Memory Stick Micro” within the reach of small children. They might accidentally swallow it.

On image data compatibility

- Image data files recorded on a “Memory Stick Duo” by your camcorder conform to the “Design rule for Camera File system” universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association).
- On your camcorder, you cannot play back still images recorded on other devices (DCR-TRV900E or DSC-D700/D770) that do not conform to the universal standard. (These models are not sold in some regions.)
- If you cannot use a “Memory Stick Duo” that has been used with another device, format it with your camcorder (p. 88). Note that formatting erases all information on the “Memory Stick Duo.”
- You may not be able to play back images with your camcorder:
  – When playing back image data modified on your computer.
  – When playing back image data recorded with other devices.

About the “InfoLITHIUM” battery pack

This unit is compatible with an “InfoLITHIUM” battery pack (L series). Your camcorder operates only with an “InfoLITHIUM” battery pack. “InfoLITHIUM” L series battery packs have the InfoLITHIUM L mark.

What is an “InfoLITHIUM” battery pack?

An “InfoLITHIUM” battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and a supplied AC Adaptor/Charger.
The “InfoLITHIUM” battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes.
With an AC Adaptor/Charger, the remaining battery time and charging time appear.

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10 °C to 30 °C (50 °F to 86 °F) until the charge lamp of the AC Adaptor/Charger turns off. If you charge the

battery pack outside of this temperature range, you may not be able to charge it efficiently.

To use the battery pack effectively

- Battery pack performance decreases when the surrounding temperature is 10 °C (50 °F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.
  - Put the battery pack in a pocket to warm it up, and insert it in your camcorder right before you start taking shots.
  - Use a large capacity battery pack: NP-F770/F970 (optional).
- Frequent use of the LCD screen or a frequent playback, fast forward or rewind operation wears out the battery pack faster.
  We recommend using a large capacity battery pack: NP-F770/F970.
- Be sure to set the POWER switch to OFF when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for two or three times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About the remaining battery time indicator

- When the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again. Remaining battery time will be indicated correctly. Note, however, that the battery indication will not be restored if it is used in high temperatures for a long time, or if left in a fully charged state, or when the battery pack is frequently used. Use the remaining battery time indication as a rough guide only.
- The ⌧ mark that indicates low battery flashes even if there are still 5 to 10 minutes of battery time remaining, depending on the operating conditions or ambient temperature.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it up on your camcorder once a year to maintain proper function. To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To discharge the battery pack on your camcorder completely, leave your camcorder in tape recording standby until the power goes off (p. 16).

About battery life

- Battery capacity decreases over time and through repeated use. If decreased usage time between charges becomes significant, it is probably time to replace it with a new one.
- Each battery's life is governed by storage, operating and environmental conditions.

About i.LINK

The HDV/DV (i.LINK) jack on your camcorder is an i.LINK-compliant 4-pin jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for transferring digital video, digital audio, and other data to other i.LINK-compatible devices. You can also control other devices using the i.LINK.
i.LINK-compatible devices can be connected using an i.LINK cable. Possible applications are operations and data transactions with various digital AV devices.
When two or more i.LINK-compatible devices are daisy-chained with the unit, operation becomes possible from any device in the chain. Note that operation method may vary, or data transactions may not be possible, depending on specifications and characteristics of the connected devices.

Notes

- Normally, only one device can be connected to this unit with an i.LINK cable. When connecting this unit to an HDV/DV compatible device having two or more i, HDV/DV interfaces, refer to the operating instructions of the device to be connected.
- i.LINK is a more familiar term for the IEEE 1394 data transport bus proposed by Sony, and is a trademark approved by many corporations.
- IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

About the i.LINK Baud rate

i.LINK's maximum baud rate varies according to the device. There are 3 types.

S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under "Specifications" in the operating instructions of each piece of equipment. It is also indicated near the i.LINK interface on some devices.
The baud rate may differ from the indicated value when the unit is connected to a device with a different maximum baud rate.

*** What is Mbps?**

Mbps stands for "megabits per second," or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

To use i.LINK functions on this unit

For details on how to dub when this unit is connected to other video devices having an i.LINK interface, see page 96.
This unit can also be connected to other i.LINK-compatible devices made by Sony (for example, a VAIO series personal computer) as well as to video devices.
Some i.LINK compatible video devices, such as Digital Televisions, DVD, MICROMV or HDV recorders/players are not compatible with this unit. Before connecting to other devices, be sure to confirm whether the device is compatible with an HDV/DV device or not. For details on precautions and compatible application software, refer also to the operating instructions for the device to be connected.

Notes

- When connecting a device with an i.LINK terminal to your camcorder via an i.LINK cable, switch off the device and unplug it from the power socket before plugging in or unplugging the i.LINK cable.

About x.v.Color

- x.v.Color is a more familiar term for the xvYCC standard proposed by Sony, and is a trademark of Sony.
- xvYCC is an international standard for color space in video. This standard can express a wider color range than the currently used broadcast standard.

About handling of your camcorder

On use and care

- Do not use or store the camcorder and accessories in the following locations.
  - Anywhere extremely hot or cold. Never leave them exposed to temperatures above 60 °C (140 °F), such as under direct sunlight, near heaters or in a car parked in the sun. They may malfunction or become deformed.
  - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
  - Near strong radio waves or radiation. The camcorder may not be able to record properly.
  - Near AM receivers and video equipment. Noise may occur.
  - On a sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
  - Near windows or outdoors, where the LCD screen, the viewfinder, or the lens may be

exposed to direct sunlight. This damages the inside of the viewfinder or the LCD screen.
– Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- If any solid object or liquid gets inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling, disassembling, modifying, physical shock, or impact such as hammering, dropping or stepping on the product. Be particularly careful of the lens.
- Do not use a deformed or damaged battery pack.
- Keep the POWER switch setting to OFF when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- When disconnecting the power cord (mains lead), pull it by the plug and not the lead.
- Do not damage the power cord (mains lead) such as by placing anything heavy on it.
- Keep metal contacts clean.
- Keep the Remote Commander and button-type battery out of children's reach. If the battery is accidentally swallowed, consult a doctor immediately.
- If the battery electrolytic liquid has leaked,
  – consult your local authorized Sony service facility.
  – wash off any liquid that may have contacted your skin.
  – if any liquid gets in your eyes, wash with plenty of water and consult a doctor.

■ When not using your camcorder for a long time

- Periodically turn on the camcorder and play a cassette for about 3 minutes.
- Use up the battery pack completely before storing it.

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this state, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, [Moisture condensation. Eject the cassette] or [Moisture condensation. Turn off for 1H.] appears. The indicator will not appear when the moisture condenses on the lens.

■ If moisture condensation has occurred

None of the functions except cassette ejection will work. Eject the cassette, turn off your camcorder, and leave it for about one hour with the cassette lid open. Your camcorder can be used again when both of the following conditions are met:

- The warning message does not appear when the power is turned on.
- Neither ⏏ nor ⏏ flashes when a cassette is inserted and the video operation buttons are pressed.

If moisture starts to condense, your camcorder sometimes cannot detect condensation. If this happens, the cassette is sometimes not ejected for 10 seconds after the cassette lid is opened. This is not a malfunction. Do not close the cassette lid until the cassette is ejected.

■ Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a humid place as shown below.

- When you bring your camcorder from a ski slope into a place warmed up by a heating device.
- When you bring your camcorder from an air conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid place.

■ How to avoid moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about one hour).

Video head

If you play back a tape recorded in HDV format, the image and sound may freeze for a while (about 0.5 seconds).
This occurs if the HDV signals cannot be recorded or played back correctly because of dirt on the tape or video head. Depending on the cassette, this fairly infrequently occurs even if the cassette is brand new or is not used a lot.
If this freezing point is created while playing back, you can solve this problem and see the pictures by rewinding after slightly forwarding. Such a freezing point cannot be recovered if it was created while recording.
To prevent such a problem, use the Sony mini DV cassette.

- If the following problem occurs, clean the video heads for 10 seconds with the Sony cleaning cassette (optional).
  - Playback pictures do not move.
  - Playback pictures do not appear.
  - The sound breaks off.
  - [Dirty video head. Use a cleaning cassette.] appears on the screen during recording.
  - The following phenomenon occurs in HDV format.

The playback screen pauses.

The playback screen goes blank. (Solid blue screen)

  - The following phenomenon occurs in DVCAM (DV) format.

Block-noise appears.

The playback screen goes blank. (Solid blue screen)

- The video heads will be worn after long use. If you cannot obtain a clear image even after using a cleaning cassette (optional), the video heads may be worn out. Please contact your Sony dealer or local authorized Sony service facility to have the video heads replaced.

LCD screen

- Do not exert excessive pressure on the LCD screen, as it may cause damage.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

■ To clean the LCD screen

If fingerprints or dust make the LCD screen dirty, it is recommended you use a soft cloth to clean it. When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

On handling the casing

- If the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water, and then wipe the casing with a dry soft cloth.
- Avoid the following to avoid damage to the finish.
  - Using chemicals such as thinner, benzine, alcohol, chemical cloths, repellent, insecticide and sunscreen.

– Handling with above substances on your hands.
– Leaving the casing in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
  – When there are fingerprints on the lens surface.
  – In hot or humid locations
  – When the lens is exposed to salty air such as at the seaside.
- Store in a well-ventilated location subject to little dirt or dust.
- To prevent mold, periodically clean the lens as described above. It is recommended that you operate your camcorder about once a month to keep it in optimum state for a long time.

On charging the pre-installed rechargeable battery

Your camcorder has a pre-installed rechargeable battery to retain the date, time, and other settings even when the POWER switch is set to OFF. The pre-installed rechargeable battery is always charged while your camcorder is connected to the wall outlet (wall socket) via the AC Adaptor/Charger or while the battery pack is inserted. The rechargeable battery will be fully discharged in about **3 months** if you do not use your camcorder at all without the AC Adaptor/Charger connected or the battery pack attached. Use your camcorder after charging the pre-installed rechargeable battery.
However, even if the pre-installed rechargeable battery is not charged, the camcorder operation will not be affected as long as you are not recording the date.

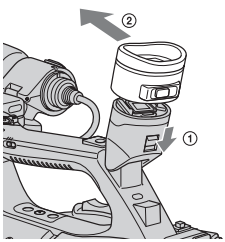
■ Procedures

Connect your camcorder to a wall outlet (wall socket) using the supplied AC Adaptor/Charger, and leave it with the POWER switch set to OFF for more than 24 hours.

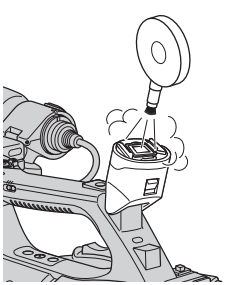
Removing dust from inside the viewfinder

1 Remove the eye piece of the viewfinder.

Slide down the viewfinder release lever and hold it at the position (①), then lift the eye piece of the viewfinder as indicated with the arrow in the illustration (②).



2 Remove dust inside the eye piece and viewfinder with a blower.



Specifications

System

Video recording system (HDV)
2 rotary heads, Helical scanning system

Video recording system (DVCAM (DV))
2 rotary heads, Helical scanning system

Still image recording system
Exif Ver. 2.2*

Audio recording system (HDV)
Rotary heads, MPEG-1 Audio Layer-2,
Quantization: 16 bits
Fs48kHz (stereo)
transfer rate: 384 kbps

Audio recording system (DVCAM (DV))
Rotary heads, PCM system
Quantization: 12 bits
Fs32kHz (channel 1/2 stereo),
Quantization: 16 bits
Fs48kHz (channel 1/2 stereo)

Video signal
PAL color, CCIR standards
1080/50i specification

Usable cassette
Mini DV cassette with the Mini DV mark printed or Mini DVCAM cassette with the DVCAM mark printed

Tape speed (HDV)
Approx. 18.831 mm/s

Tape speed (DVCAM)
Approx. 28.221 mm/s

Tape speed (DV SP)
Approx. 18.831 mm/s

Recording/playback time (HDV)
63 min (using a PHDVM-63DM cassette)

Recording/playback time (DVCAM)
41 min (using a PHDVM-63DM cassette)

Recording/playback time (DV SP)
63 min (using a PHDVM-63DM cassette)

Fast forward/rewind time
Approx. 2 min 40 s (using a PHDVM-63DM cassette and rechargeable battery pack)
Approx. 1 min 45 s (using a PHDVM-63DM cassette and AC Adaptor/ Charger)

Viewfinder
Electric viewfinder (color, black and white)
Picture
1.1 cm (0.45 type, aspect ratio 16:9)
Total dot number
1 226 880 (approx. 852 × 3[RGB] × 480)

Image device
6.0 mm (1/3 type) 3CMOS sensor
Recording Pixels (HDV/DV16:9 still recording):
Max. 1.20 Mega (1 440 × 810) pixels**
Gross: Approx. 1 120 000 pixels
Effective (movie, 16:9):
Approx. 1 037 000 pixels
Effective (movie, 4:3):
Approx. 778 000 pixels
Effective (still, 16:9):
Approx. 1 037 000 pixels
Effective (still, 4:3):
Approx. 778 000 pixels

Lens
G Lens
20 × (Optical), Approx. 30 × (Digital, when [D.EXTENDER] is set to [ON])

Focal length
f=4.1 - 82.0 mm (3/16 - 3 1/4 in.)
When converted to a 35 mm still camera
29.5 - 590 mm (1 3/16 - 23 1/4 in.) (16:9),
36.1 - 722 mm (1 7/16 - 28 1/2 in.) (4:3)
F1.6 - 3.4
Filter diameter: 72 mm (2 7/8 in.)

Color temperature
[AUTO]
(one push) A/B
[INDOOR] (3 200K)
[OUTDOOR] (5 800K±7 offset levels)
[MANU WB TEMP] (2 300K - 15 000K in 100K steps)

Minimum illumination
1.5 lx (lux) (Fixed Shutter Speed 1/25, auto gain, auto iris) (F 1.6)

* "Exif" is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as your camcorder's setting information at the time of recording.

**The unique pixel array of Sony's ClearVid CMOS sensor and image processing system (Enhanced Imaging Processor) allows for still image resolution equivalent to the sizes described.

Output connectors

A/V Remote Connector
10-pin connector
When A/V connecting cable is connected
Video signal: 1 Vp-p, 75 Ω (ohms)
Luminance signal: 1 Vp-p, 75 Ω (ohms)
Chrominance signal: 0.3 Vp-p (burst signal), 75 Ω (ohms)
When component A/V cable is connected
Y: 1 Vp-p, 75Ω (ohms), PB/PR, CB/CR: +/- 350 mV, 75 Ω (ohms)
Audio signal: -10 dBu (at load impedance 47 kΩ (kilohms)), Output impedance with less than 2.2 kΩ (kilohms)
(0 dBu=0.775 Vrms)

HDMI OUT jack
TypeA (19-pin)

(headphones) jack
Stereo-minijack (Ø 3.5 mm)

Input/Output connectors

LANC jack
Stereo mini-minijack (Ø 2.5 mm)

INPUT1/INPUT2 jack
XLR 3-pin, female,
-48 dBu: 3kΩ (kilohms)
+4 dBu: 10kΩ (kilohms)
(0 dBu=0.775 Vrms)

HDV/DV jack
i.LINK interface (IEEE 1394, 4-pin connector S100)

LCD screen

Picture
8.0 cm (3.2 type, aspect ratio 16:9)

Total dot number
921 600 (1 920 × 480)

General

Power requirements
DC 7.2 V (battery pack)
DC 8.4 V (AC Adaptor/Charger)

Average power consumption*
During camera recording using the microphone ECM-XM1 and viewfinder with normal brightness:
HDV recording 6.9 W
DVCAM (DV) recording 6.7 W
During camera recording using the microphone ECM-XM1 and LCD with normal brightness:
HDV recording 7.1 W
DVCAM (DV) recording 6.9 W

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
-20 °C to +60 °C (-4 °F to +140 °F)

Dimensions (approx.)
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts
169 × 188 × 451 mm
(6 3/4 × 7 1/2 × 17 7/8 in.)
(w/h/d)
including the projecting parts with the battery pack (NP-F570)

Mass (approx.)
2.2 kg (5 lb 1 oz) including the lens hood with lens cover
2.5 kg (5 lb 6 oz) including the battery pack (NP-F570), cassette (PHDVM-63DM), lens hood with lens cover and microphone (ECM-XM1)

* When the HVR-MRC1 is used, the average power consumption increases about 2.5 W.

AC Adaptor/Charger AC-VQ1050

Power requirements
AC 100 V - 240 V, 50 Hz/60 Hz

Power consumption
22 W

Output voltage
DC 8.4 V*

Operating temperature
0 °C to 40 °C (32 °F to 104 °F)

Storage temperature
-20 °C to +60 °C (-4 °F to +140 °F)

Dimensions (approx.)
123 × 53 × 135 mm
(4 7/8 × 2 1/8 × 5 3/8 in.) (w/h/d)
excluding the projecting parts

Mass (approx.)
390 g (13.8 oz) excluding the power cord (mains lead)

* See the label on the AC Adaptor/Charger for other specifications.

Rechargeable battery pack NP-F570

Maximum output voltage
DC 8.4 V

Output voltage
DC 7.2 V

Maximum charge voltage
DC 8.4 V

Maximum charge current
3.0 A

Capacity
15.8 Wh (2 200 mAh)

Type
Li-ion

Design and specifications are subject to change without notice.

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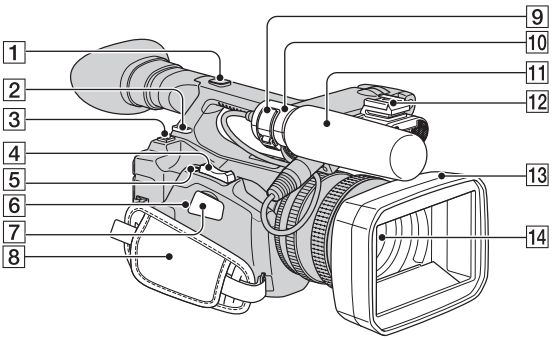
Identifying parts and controls

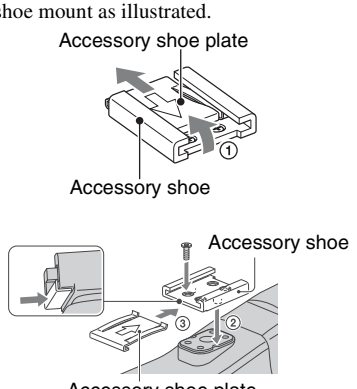
The numbers in ( ) are reference pages.



1 Accessory shoe mount (130)
2 Hook for shoulder strap (133)
3 BATT RELEASE button (13)
4 Zoom lever (26)
5 ASSIGN 7/PHOTO button (25)
6 Access lamp (22)
7 “Memory Stick Duo” slot (21)
8 Grip belt (16)
9 Microphone fixing clamper (9)
10 Microphone holder (9)
11 Microphone (9)
12 Accessory shoe (130)
13 Lens hood with lens cover (11)
14 Lens (11)

To mount the accessory shoe

Mount the accessory shoe on the accessory shoe mount as illustrated.



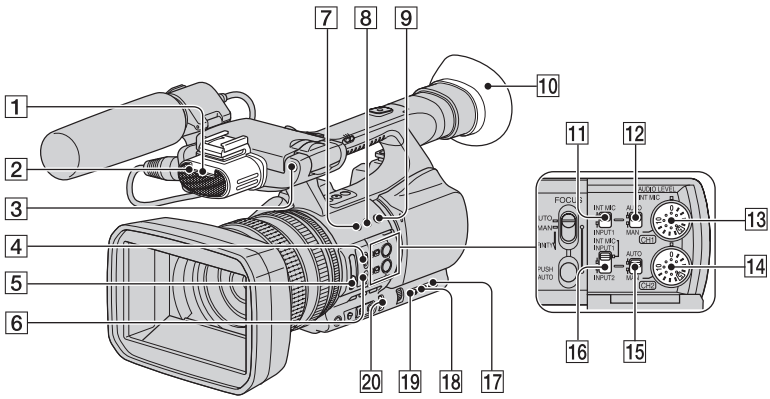
① Lift the edge of the accessory shoe plate and pull it in the direction opposite to that of the arrow on the accessory shoe plate and remove it from the accessory shoe.

② Place the accessory shoe as its protrusions matches recesses of the accessory shoe mount, then fix it to the mount with four screws.

③ Insert the accessory shoe plate in the direction of the arrow on the plate surface until the end of the plate engages the end of the shoe.

To remove the accessory shoe

Remove the shoe plate in the same way as step ① of “To mount the accessory shoe.” Loosen the 4 screws and remove the accessory shoe from the accessory shoe mount.



1 Front recording lamp (92)
The recording lamp flashes if the remaining tape or battery is low.

2 Internal microphone (9)

3 Front remote sensor (92)

4 FOCUS switch (27)

5 ND filter (31)

6 PUSH AUTO button (27)

7 ASSIGN 1 button/ZEBRA button (44)

8 ASSIGN 2 button/AE SHIFT button* (44)

9 ASSIGN 3 button/REC REVIEW button (44)

10 Large eyecup (18)

11 CH1 (INT MIC/INPUT1) switch (42)

12 AUTO/MAN (CH1) switch (42)

13 AUDIO LEVEL(CH1) dial (42)

14 AUDIO LEVEL(CH2) dial (42)

15 AUTO/MAN (CH2) switch (42)

16 CH2 (INT MIC/INPUT1/INPUT2) switch (42)

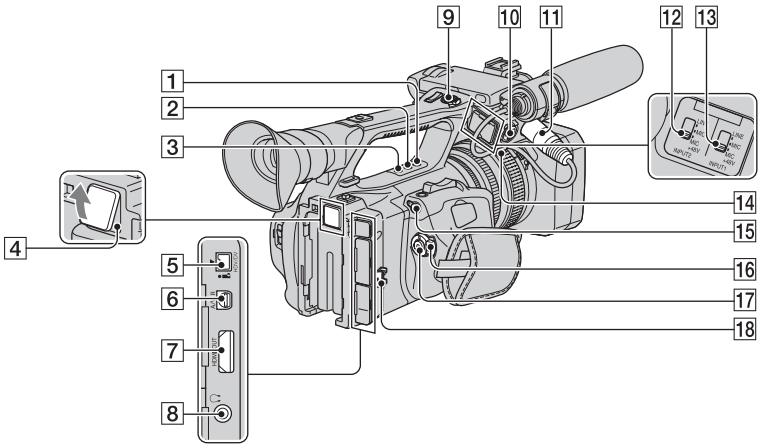
17 STATUS CHECK button (53)

18 PICTURE PROFILE button (33)

19 MENU button (19)

20 AUTO/MANUAL switch (28)

* The ASSIGN 2 button /AE SHIFT button has a raised tactile dot for your convenience in locating the button.



1 ASSIGN 4 button (44)

2 ASSIGN 5 button* (44)

3 ASSIGN 6 button (44)

4 Memory Recording Unit jack (42)
For an optional memory recording unit (HVR-DR60 or HVR-MRC1)

5 HDV/DV jack (56)

6 A/V Remote Connector (56)

7 HDMI OUT jack (56)

8 (headphones) jack
For stereo mini-jack headphones

9 REC START/STOP button (23)

10 INPUT2 jack (9)

11 INPUT1 jack (9)

12 INPUT2 switch (42)

13 INPUT1 switch (42)

14 Cable holder (9)
Inner cable holder and outer cable holder are provided for securing an i.LINK cable and a microphone cable, respectively.

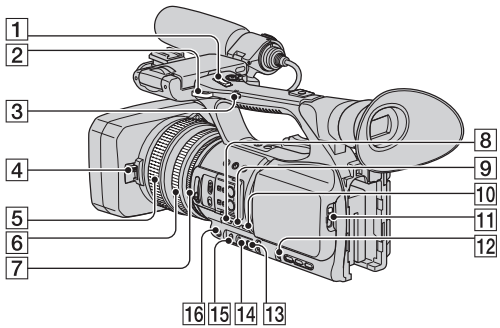
15 LANC jack
The LANC control jack is used for controlling the tape transport of video device and peripherals connected to it.

16 POWER switch (16)

17 REC START/STOP button (23)

18 Cable holder (9)
For securing the i.LINK cable or other cables

* The ASSIGN 5 button has a raised tactile dot for your convenience in locating the button.

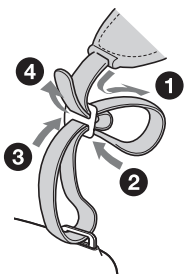


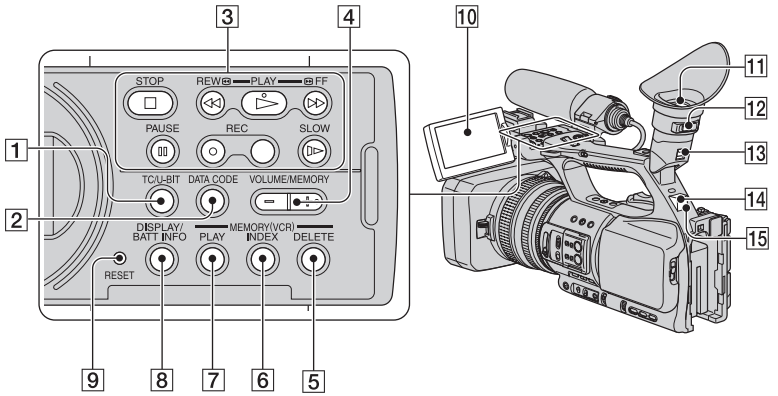
1 Handle zoom lever (26)
2 Hook for shoulder strap (133)
3 Handle zoom switch (26)
4 Lens cover lever (11)
5 Focus ring (27)
6 Zoom ring (26)
7 Iris ring (28)
8 GAIN button (30)
9 WHT BAL button* (31)
10 SHUTTER SPEED button (28)
11 ⏏ OPEN/EJECT lever (21)
12 SEL/PUSH EXEC dial (19)
13 (One push) button (32)
14 White balance memory switch (31)
15 Gain switch (30)
16 IRIS/EXPOSURE button (28)

* WHT BAL button has a raised tactile dot for your convenience in locating the button.

To attach the shoulder strap

Attach the shoulder strap (optional) to the hooks for the shoulder strap.





1 TC/U-BIT button
Switches between time code and user bit to display on the LCD screen.

2 DATA CODE button (52)

3 Video control buttons (STOP/REW/PLAY*/FF/PAUSE/REC/SLOW) (49)

4 VOLUME/MEMORY button* (49)

5 MEMORY/DELETE button (49)

6 MEMORY/INDEX button* (49)

7 MEMORY/PLAY button (49)

8 DISPLAY/BATT INFO button (52)

9 RESET button
If you press the RESET button, all settings including the clock setting (except the Picture profile and Camera profile settings) return to the default.

10 LCD screen (17)

11 Viewfinder (17)

12 Viewfinder lens adjustment lever (17)

13 Viewfinder release lever (125)

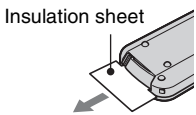
14 Rear remote sensor (92)

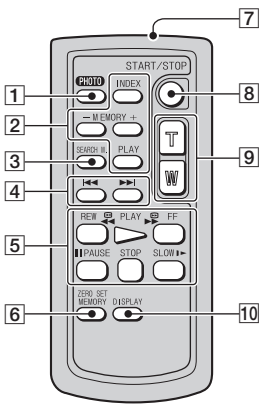
15 Rear recording lamp (92)
The recording lamp flashes if the remaining tape or battery is low.

* PLAY button, VOLUME/MEMORY button, and MEMORY/INDEX button have raised tactile dots for your convenience in locating the buttons.

Remote Commander

Remove the insulation sheet before using the Remote Commander.





1 PHOTO (25)
The on-screen image when you press this button will be recorded onto the "Memory Stick Duo" as a still image.

2 Memory control buttons (Index, –/+, Memory/playback) (50)

3 SEARCH M. (54)

4 ⏮ ⏭

5 Video control buttons (Rewind, Playback, Fast-forward, Pause, Stop, Slow) (49)

6 ZERO SET MEMORY
This button is invalid with your camcorder.

7 Transmitter

8 START/STOP (23)

9 Power zoom (26)

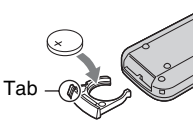
10 DISPLAY (52)

Notes

- Aim the Remote Commander towards the remote sensor to operate your camcorder.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- When you are operating with the Remote Commander supplied with your camcorder, your VCR may also operate. In that case, select a commander mode other than VTR 2 for your VCR, or cover the sensor of your VCR with black paper.

To change the battery of the Remote Commander

① While pressing on the tab, inset your fingernail into the slit to pull out the battery case.
② Place a new battery with the + side facing up.
③ Insert the battery case back into the Remote Commander until it clicks.



WARNING

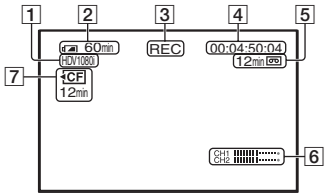
Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

- When the lithium battery becomes weak, the operating distance of the Remote Commander may shorten, or the Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.

Indicators for the LCD screen and viewfinder

The numbers in ( ) are reference pages.
The indicators will not be recorded on the tape during recording.

Recording movies



1 Recording format (HDV1080i or DVCAM, DV SP) (83)

2 Remaining battery (approx.)

3 Recording status ([STBY] (standby) or [REC] (recording))

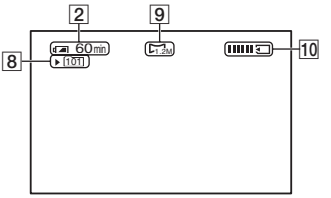
4 During recording:
Tape counter (hour: minute: second: frame)
During playback:
Time code (hour: minute: second: frame)

5 Recording capacity of the tape (approx.)

6 Audio level display (80)

7 Remaining recording time of an external Memory Recording Unit (optional)

Recording still images



8 Recording folder (89)

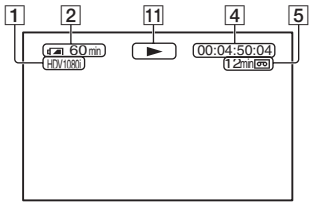
9 Image size (25)

10 Recording indicator (25)

Data code during recording

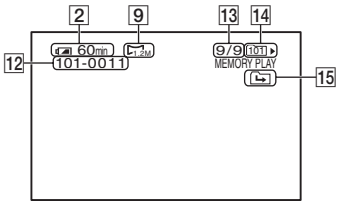
The date/time during recording and the camera setting data will be recorded automatically. They do not appear on the screen during recording, but you can check them on the screen by pressing the DATA CODE button during playback (p. 52).

Viewing movies



11 Tape transport indicator
Recording mode (DVCAM or DV SP) appears when a tape recorded in the DVCAM or DV SP format is played back. DVCAM DV

Viewing still images



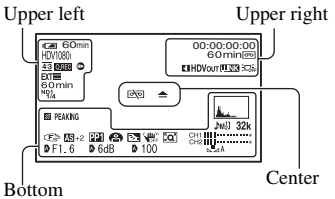
12 Data file name

13 Picture number/Total number of recorded pictures in the current playback folder

14 Playback folder (89)

15 Previous/Next folder icon
The , or appears when the first or last picture of the current folder is displayed and when there are multiple folders on the same "Memory Stick Duo." You can move to Previous/Next folder with the VOLUME/MEMORY button.

Indicators when you made changes



Upper left

Indicator	Meaning
HDV1080i DVCAM DV SP	Recording format (83)
4:3	DV WIDE REC (84)*
Q.REC	QUICK REC (91)**
	DV FRAME REC (73)*
ND OFF CLR ND1 1/4 ND2 1/16 ND3 1/64	ND filter (31)
	INTERVAL REC (72)
EXT EXT L EXT CF	EXT REC CTRL (85)
25p SCAN 25P	REC TYPE SCAN TYPE (83)

Upper right

Indicator	Meaning
	INDEX MARK (45)
HDV IN DV IN	HDV input/ DV input (97)
HDV OUT DV OUT	HDV output/ DV output (96)
i.LINK	i.LINK connection (56, 93)
OFF	LCD backlight off (17)

Center

Indicator	Meaning
	Warning (113)

Bottom

Indicator	Meaning
	HISTOGRAM (78)
32k 48k NS	DV AU.MODE (DV Audio Mode) (75)*
M1 M2	Manual volume control(42, 76)
	Manual focus (27)
PP1 ~ PP6	Picture profile (33)
	SPOTLIGHT(70)
	BACK LIGHT (70)
OFF	SteadyShot off (70)
PEAKING	PEAKING (79)
	D.EXTENDER (71)
AS	AE SHIFT (69)
ECS	Extended clear scan (30, 69)
E	EXPOSURE control (29)
	Auto setting (80)
A B	White balance (31)
OFF	FOCUS MACRO (71)
HYPER	HYPER GAIN (68)
(COLOR)	x.v.Color (74)**
	ZEBRA (78)

* The settings can be made only for the pictures in the DVCAM (DV) format.

** The setting can be made only for the pictures in the HDV format.

Tips

- Indicators may look different or appear at different positions.

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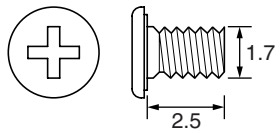
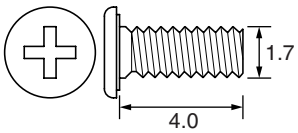
HARDWARE LIST (1/8)

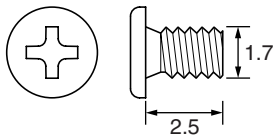
#1: M1.7 X 2.5
(Black)
2-635-562-11



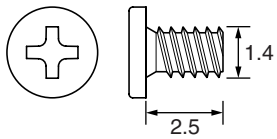
#2: M1.7 X 4.0
(Black)
2-635-562-31



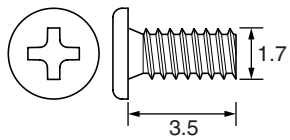
#3: M1.7 X 2.5
(Red)
2-660-401-01



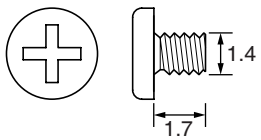
#4: M1.4 X 2.5 (Tapping)
(Dark Silver)
3-348-998-81



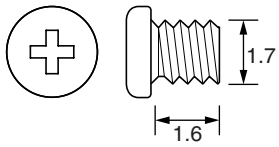
#5: M1.7 X 3.5 (Tapping)
(Black)
3-080-204-01



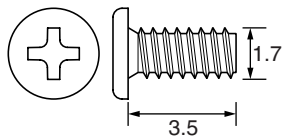
#6: M1.4 X 1.7
(Silver)
2-598-474-01



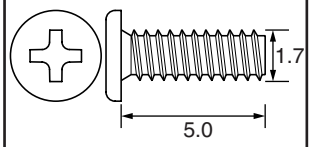
#7: M1.7 X 1.6
(Black)
7-627-552-18



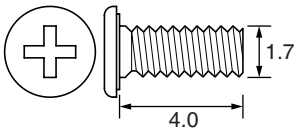
#8: M1.7 X 3.5 (Tapping)
(Silver)
3-078-890-01



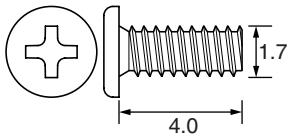
#9: M1.7 X 5.0 (Tapping)
(Silver)
3-078-890-21



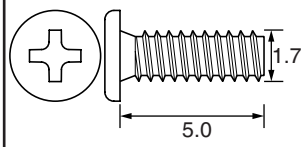
#10: M1.7 X 4.0
(Silver)
2-599-475-31



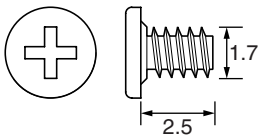
#11: M1.7 X 4.0 (Tapping)
(Silver)
3-078-890-11



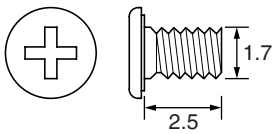
#12: M1.7 X 5.0 (Tapping)
(Black)
3-080-204-21



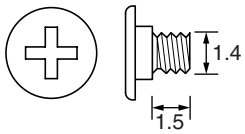
#13: M1.7 X 2.5 (Tapping)
(Silver)
3-085-397-01



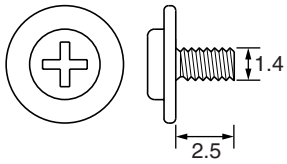
#14: M1.7 X 2.5
(Silver)
2-599-475-11



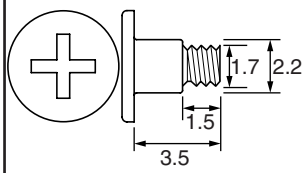
#15: M1.4 X 1.5
(Silver)
3-062-214-01



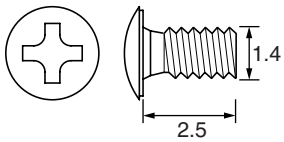
#16: M1.4 X 2.5
(Silver)
2-586-337-01



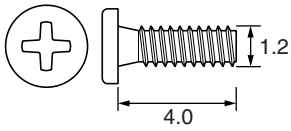
#17: M1.7 X 1.5
(Silver)
2-586-389-01



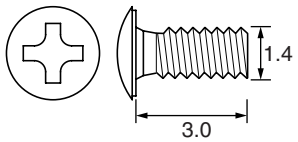
#18: M1.4 X 2.5
(Silver)
2-635-591-21



#19: M1.2 X 4.0 (Tapping)
(Red)
3-086-156-21

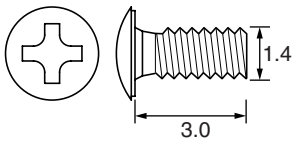


#20: M1.4 X 3.0
(Silver)
2-635-591-31

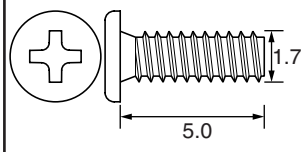


HARDWARE LIST (2/8)

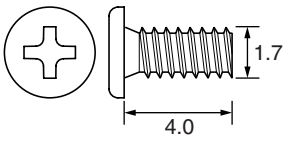
#21: M1.4 X 3.0
(Black)
2-662-396-21



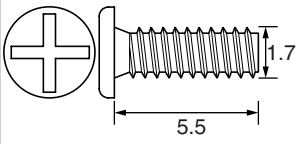
#22: M1.7 X 5.0 (Tapping)
(Silver)
3-083-261-01



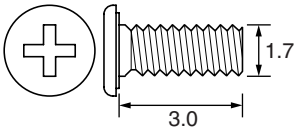
#23: M1.7 X 4.0 (Tapping)
(Black)
3-080-204-11



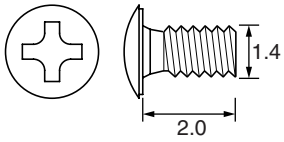
#24: B1.7 X 5.5 (Tapping)
(Black)
4-679-805-11



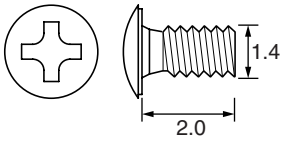
#25: M1.7 X 3.0
(Black)
2-635-562-21



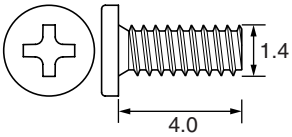
#26: M1.4 X 2.0
(Silver)
2-635-591-11



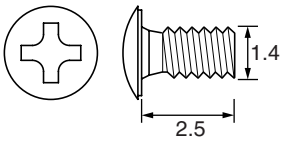
#27: M1.4 X 2.0
(Black)
2-662-396-11



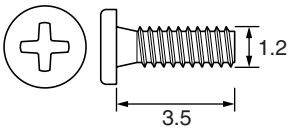
#28: M1.4 X 4.0 (Tapping)
(Silver)
3-348-998-61



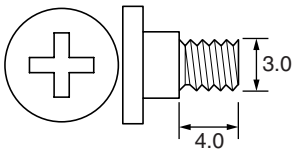
#29: M1.4 X 2.5
(Black)
2-662-396-01



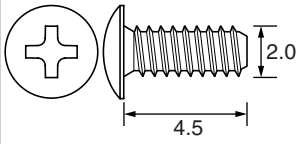
#30: M1.2 X 3.5 (Tapping)
(White)
3-086-156-11



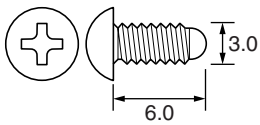
#31: M3.0 X 4.0
(Silver)
2-102-434-01



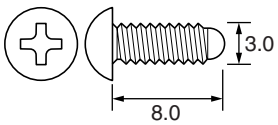
#32: M2.0 X 4.5 (Tapping)
(Silver)
2-102-498-01



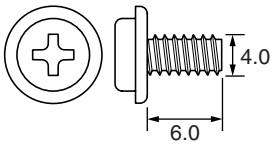
#33: M3.0 X 6.0
(Silver)
3-077-331-21



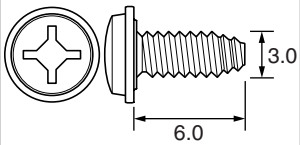
#34: M3.0 X 8.0
(Black)
3-077-331-41



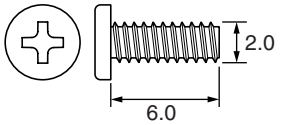
#35: M4.0 X 6.0 (Tapping)
(Silver)
3-975-291-02



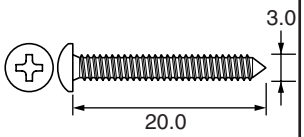
#36: M3.0 X 6.0
(Silver)
4-886-821-11



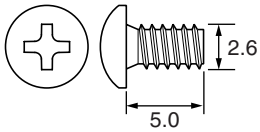
#37: M2.0 X 6.0 (Tapping)
(Black)
3-080-206-31



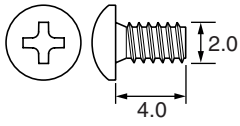
#38: M3.0 X 20.0 (Tapping)
(Silver)
7-685-651-79



#39: M2.6 X 5.0 (Tapping)
(Black)
7-685-791-09

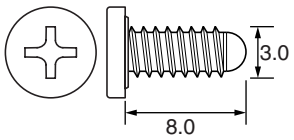


#40: M2.0 X 4.0 (Tapping)
(Silver)
7-685-851-04

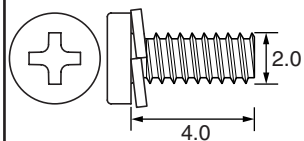


HARDWARE LIST (3/8)

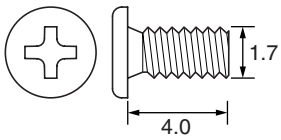
#41: M3.0 X 8.0 (Tapping)
(Silver)
3-065-748-01



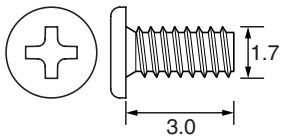
#42: M2.0 X 4.0 (Tapping)
(Silver)
7-628-253-00



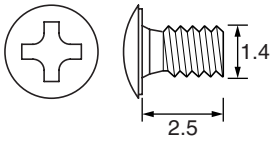
#43: M1.7 X 4.0
(Red)
2-660-401-31



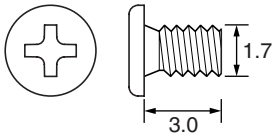
#44: M1.7 X 3.0 (Tapping)
(Silver)
3-078-890-61



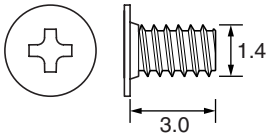
#45: M1.4 X 2.5
(Silver)
2-587-151-01



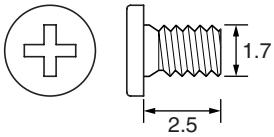
#46: M1.7 X 3.0
(Red)
2-660-401-11



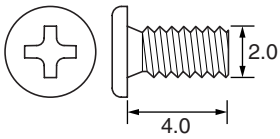
#47: M1.4 X 3.0 (Tapping)
(Silver)
2-665-774-01



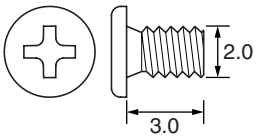
#48: M1.7 X 2.5
(Silver)
3-973-497-91



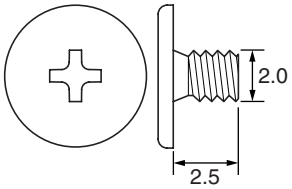
#49: M2.0 X 4.0
(Black)
2-630-005-31



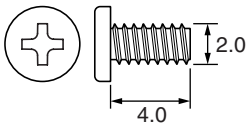
#50: M2.0 X 3.0
(Red)
2-891-494-11



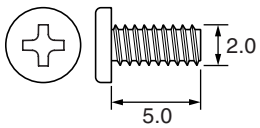
#51: M2.0 X 2.5
(Silver)
3-073-686-01



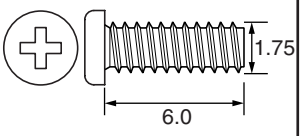
#52: M2.0 X 4.0 (Tapping)
(Black)
3-080-206-11



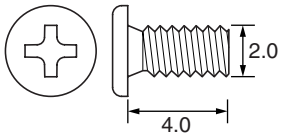
#53: M2.0 X 5.0 (Tapping)
(Black)
3-080-206-21



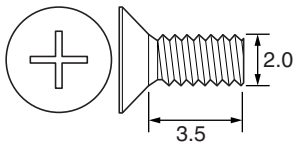
#54: M1.75 X 6.0 (Tapping)
(Black)
3-318-203-11



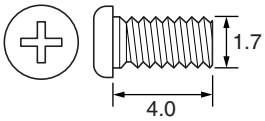
#55: M2.0 X 4.0
(Silver)
2-655-582-11



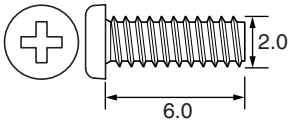
#56: M2.0 X 3.5
(Silver)
3-067-187-11



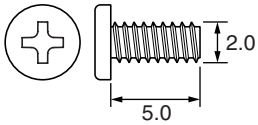
#57: M1.7 X 4.0
(Black)
7-627-852-18



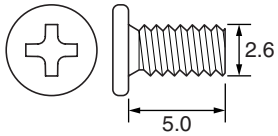
#58: M2.0 X 6.0 (Tapping)
(Silver)
3-719-408-11



#59: M2.0 X 5.0 (Tapping)
(Silver)
3-080-205-21



#60: M2.6 X 5.0
(Black)
3-061-062-11



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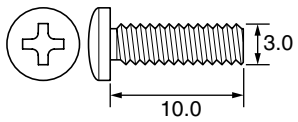
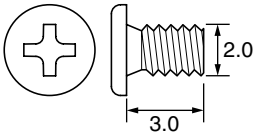
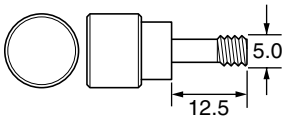
#61: M3.0 X 10.0
(Black)
7-682-549-09



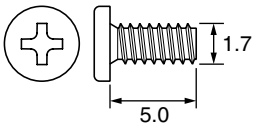
#62: M2.0 X 3.0
(Silver)
3-080-202-21



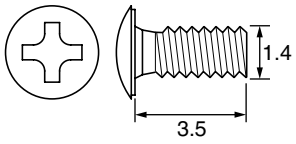
#63: M5.0 X 12.5
(Black)
3-060-811-21



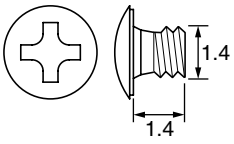
#64: M1.7 X 5.0 (Tapping)
(Silver)
2-666-551-21



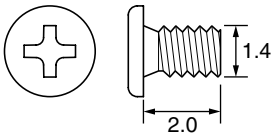
#65: M1.4 X 3.5
(Silver)
2-635-591-01



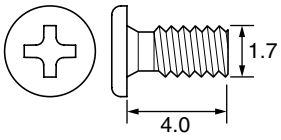
#66: M1.4 X 1.4
(Silver)
2-635-591-41



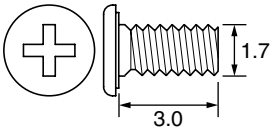
#67: M1.4 X 2.0
(Silver)
3-389-523-16



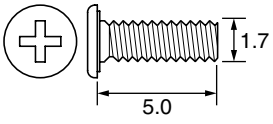
#68: M1.7 X 4.0
(Silver)
2-655-581-01



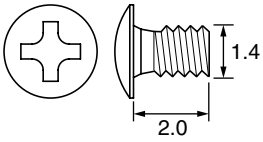
#69: M1.7 X 3.0
(Silver)
2-599-475-21



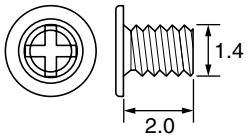
#70: M1.7 X 5.0
(Silver)
2-599-475-41



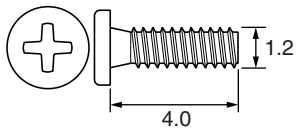
#71: M1.4 X 2.0
(Red)
3-208-537-01



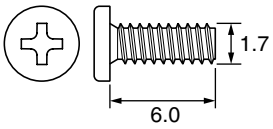
#72: M1.4 X 2.0
(Silver)
4-663-621-41



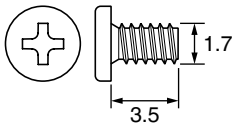
#73: M1.2 X 4.0 (Tapping)
(Black)
3-086-156-61



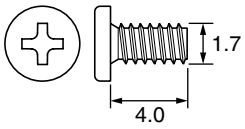
#74: M1.7 X 6.0 (Tapping)
(Silver)
2-666-551-31



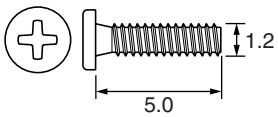
#75: M1.7 X 3.5 (Tapping)
(Silver)
2-666-551-01



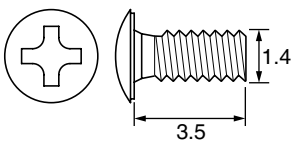
#76: M1.7 X 4.0 (Tapping)
(Silver)
2-666-551-11



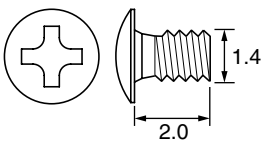
#77: M1.2 X 5.0 (Tapping)
(Silver)
3-086-156-31



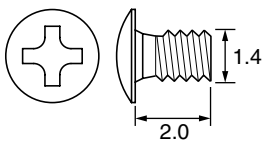
#78: M1.4 X 3.5
(Red)
3-208-537-11



#79: M1.4X 2.0
(Silver)
2-587-151-11



#80: M1.4X 2.0
(Black)
3-279-411-01



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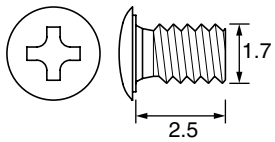
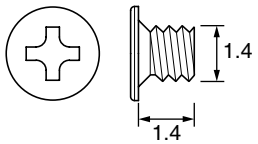
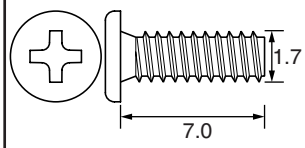
#81: M1.7 X 2.5
(Silver)
2-515-756-01



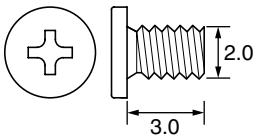
#82: M1.4 X 1.4
(Silver)
3-272-251-01



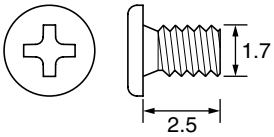
#83: M1.7 X 7.0 (Tapping)
(Black)
3-080-204-41



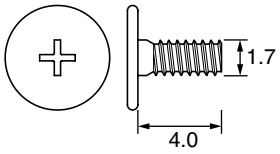
#84: M2.0 X 3.0
(Silver)
3-072-453-11



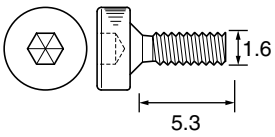
#85: M1.7 X 2.5
(Black)
2-515-483-11



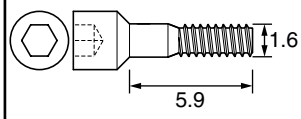
#86: M1.7 X 4.0 (Tapping)
(Silver)
2-695-434-21



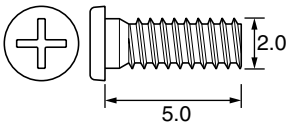
#87: M1.6 X 5.3
(Black)
2-689-328-01



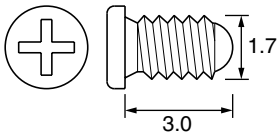
#88: M1.6 X 5.9 (Tapping)
(Silver)
2-689-015-01



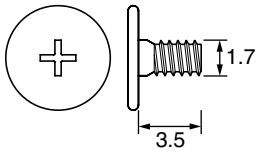
#89: M2.0 X 5.5 (Tapping)
(Silver)
2-695-575-01



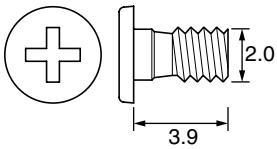
#90: M1.7 X 3.0
(Silver)
3-271-395-01



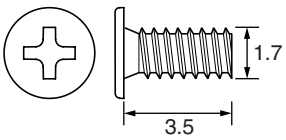
#91: M1.7 X 3.0 (Tapping)
(Silver)
2-695-434-11



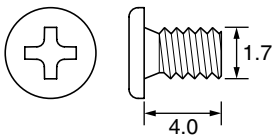
#92: M2.0 X 3.9
(Black)
3-268-954-01



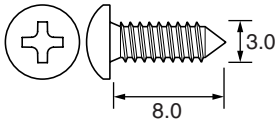
#93: M1.7 X 3.5 (Tapping)
(Silver)
3-254-082-01



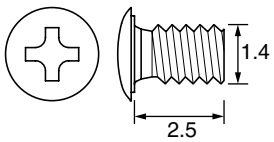
#94: M1.7 X 4.0
(Black)
2-515-483-31



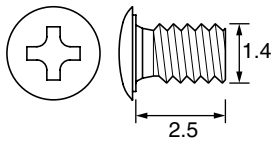
#95: M3.0 X 8.0 (Tapping)
(Black)
7-685-646-79



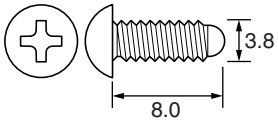
#96: M1.4 X 2.5
(Silver)
2-587-151-21



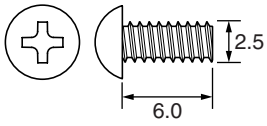
#97: M1.4 X 2.5
(Black)
2-662-396-31



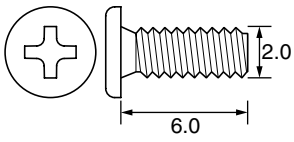
#98: M3.0 X 8.0
(Silver)
3-077-331-01



#99: M2.5 X 6.0 (Tapping)
(Silver)
3-776-750-02



#100: M2.0 X 6.0
(Black)
3-080-203-51



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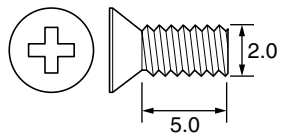
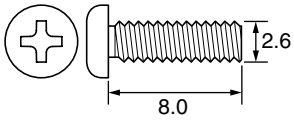
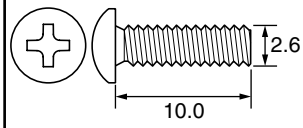
#101: M2.0 X 5.0
(Silver)
7-621-555-39



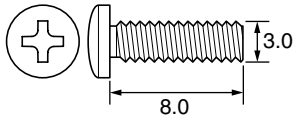
#102: M2.6 X 8.0
(Black)
7-621-284-30



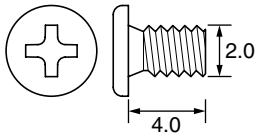
#103: M2.6 X 10.0
(Silver)
7-685-794-09



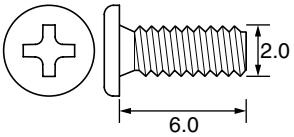
#104: M3.0 X 8.0
(Black)
7-682-548-09



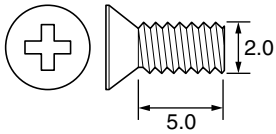
#105: M2.0 X 4.0
(Red)
2-891-494-31



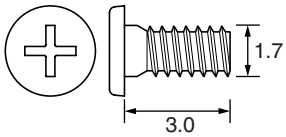
#106: M2.0 X 6.0
(Black)
3-713-786-11



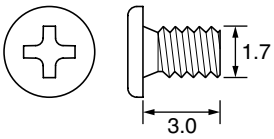
#107: M2.0 X 5.0
(Silver)
3-032-750-01



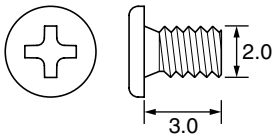
#108: M1.7 X 3.0 (Tapping)
(Black)
2-695-430-01



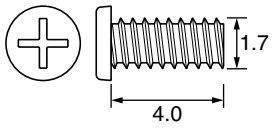
#109: M1.7 X 3.0
(Black)
2-515-483-21



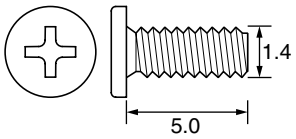
#110: M2.0 X 3.0
(Black)
2-630-005-21



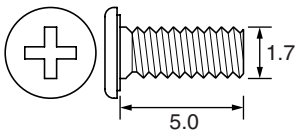
#111: M1.7 X 4.0 (Tapping)
(Black)
2-887-124-01



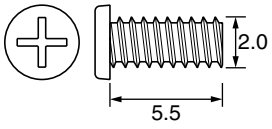
#112: M1.4 X 5.0
(Black)
2-178-410-11



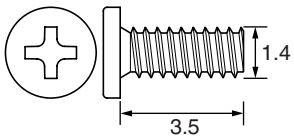
#113: M1.7 X 5.0
(Black)
2-635-562-41



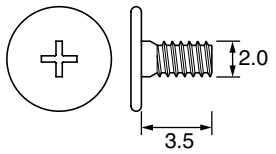
#114: M2.0 X 5.5 (Tapping)
(Silver)
2-698-464-01



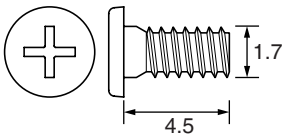
#115: M1.4 X 3.5 (Tapping)
(Silver)
3-348-998-51



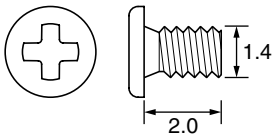
#116: M2.0 X 3.5 (Tapping)
(Silver)
2-695-435-01



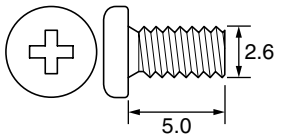
#117: M1.7 X 4.5 (Tapping)
(Silver)
2-695-429-31



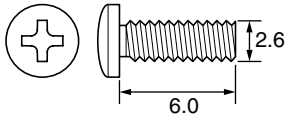
#118: M1.4 X 2.0
(Black)
2-655-580-01



#119: M2.6 X 5.0
(Black)
7-627-556-58



#120: M2.6 X 6.0
(Silver)
7-621-770-67



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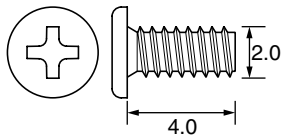
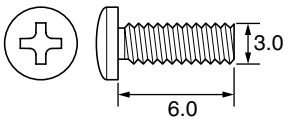
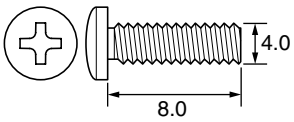
#121: M2.0 X 4.0 (Tapping)
(Silver)
3-080-205-11



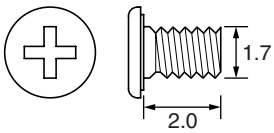
#122: M3.0 X 6.0
(Black)
7-682-547-09



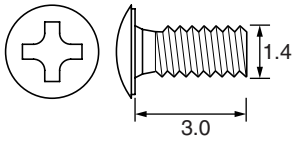
#123: M4.0 X 8.0
(Black)
7-682-561-09



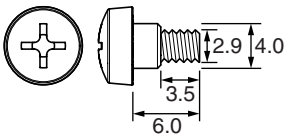
#124: M1.7 X 2.0
(Silver)
2-599-475-01



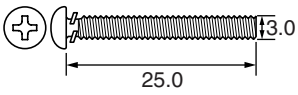
#125: M1.4 X 3.0
(Black)
3-291-847-01



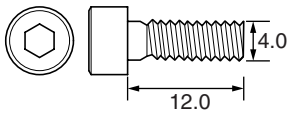
#126: M2.9 X 3.5
(Black)
3-292-616-01



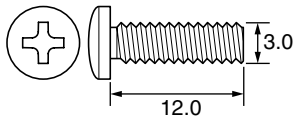
#127: M3.0 X 25.0
(Black)
7-682-654-09



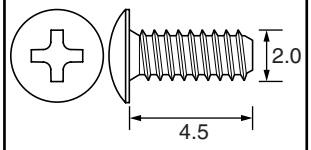
#128: M4.0 X 12.0
(Black)
3-452-472-01



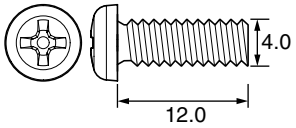
#129: M3.0 X 12.0
(Black)
7-682-550-09



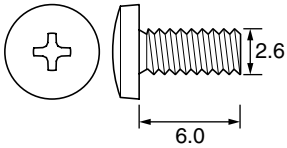
#130: M2.0 X 4.5 (Tapping)
(Silver)
3-732-817-11



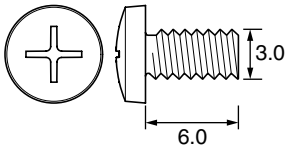
#131: M4.0 X 12.0
(Silver)
3-452-471-01



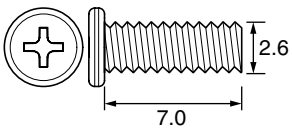
#132: M2.6 X 6.0
(Black)
4-673-655-01



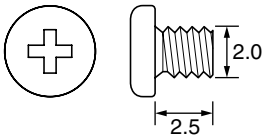
#133: M3.0 X 6.0
(Black)
3-452-484-01



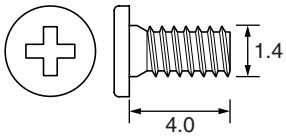
#134: M2.6 X 7.0
(Black)
3-299-572-01



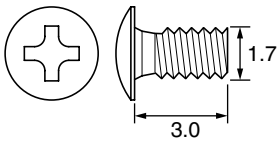
#135: M2.0 X 2.5
(Black)
7-627-553-28



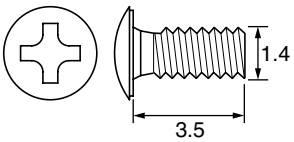
#136: M1.4 X 4.0 (Tapping)
(Black)
3-065-509-11



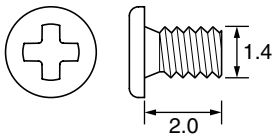
#137: M1.7 X 3.0
(Black)
3-090-976-62



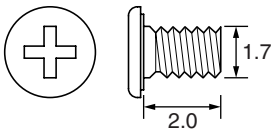
#138: M1.4 X 3.5
(Silver)
4-104-078-01



#139: M1.4 X 2.0
(Silver)
2-655-579-01

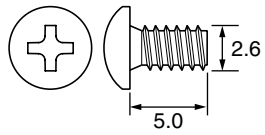


#140: M1.7 X 2.0
(Black)
2-635-562-01

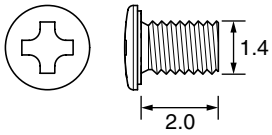


HARDWARE LIST (8/8)

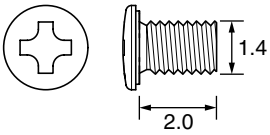
#141: M2.6 X 5.0 (Tapping)
(Silver)
7-685-791-01



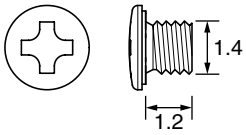
#142: M1.4 X 2.0
(Silver)
4-111-392-01



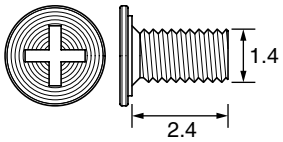
#143: M1.4 X 2.0
(Black)
4-111-392-11



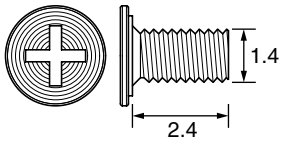
#144: M1.4 X 1.2
(Silver)
4-111-392-21



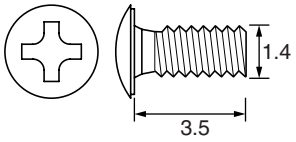
#145: M1.4 X 2.4
(Silver)
4-111-248-01



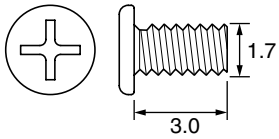
#146: M1.4 X 2.4
(Black)
4-111-248-11



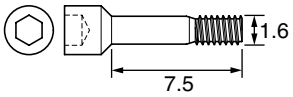
#147: M1.4 X 3.5
(Black)
2-662-396-41



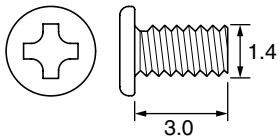
#148: M1.7 X 3.0
(Silver)
3-057-082-21



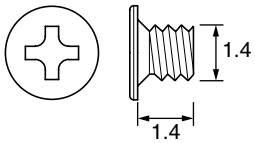
#149: M1.6 X 7.5 (Tapping)
(Silver)
4-115-505-01



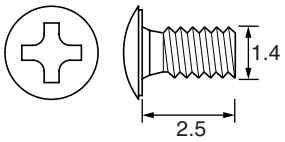
#150: M1.4 X 3.0
(Black)
4-105-150-01



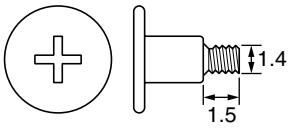
#151: M1.4 X 1.4
(Silver)
3-272-251-11



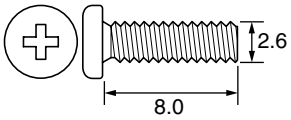
#152: M1.4 X 2.5
(Black)
4-116-473-11



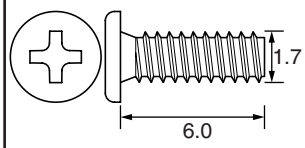
#153: M1.4 X 1.5
(Silver)
3-059-718-01



#154: M2.6 X 8.0
(Silver)
7-627-556-97



#155: M1.7 X 6.0 (Tapping)
(Black)
3-080-204-31



HVR-Z5C/Z5E/Z5J/Z5N/Z5P/Z5U

RMT-831

SONY

SERVICE MANUAL

US Model
Canadian Model
AEP Model
E Model
Chinese Model
Japanese Model

Ver. 1.2 2009.04

SUPPLEMENT-1

File this supplement with the service manual.
(DI09-013)

Subject:
- **Change of HELP**
- **Change of Schematic Diagrams**
- **Change of Repair Parts List**
- **Change of EVR Page Table**
- **Change of Flange Back Adjustment**

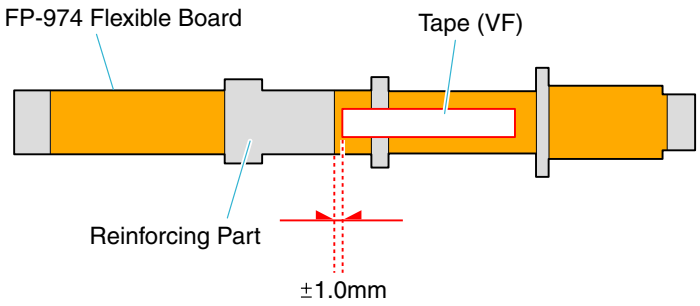
HELP

☞ : Points added portion

Before change

HELP08

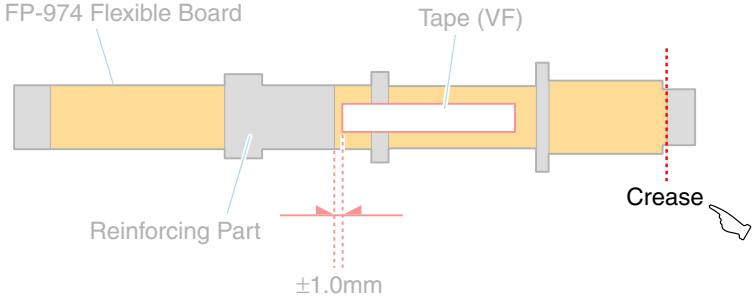
Sticking standard of the Tape (VF)



After change

HELP08

Sticking standard of the Tape (VF)



Sony EMCS Co.

2009D0800-1
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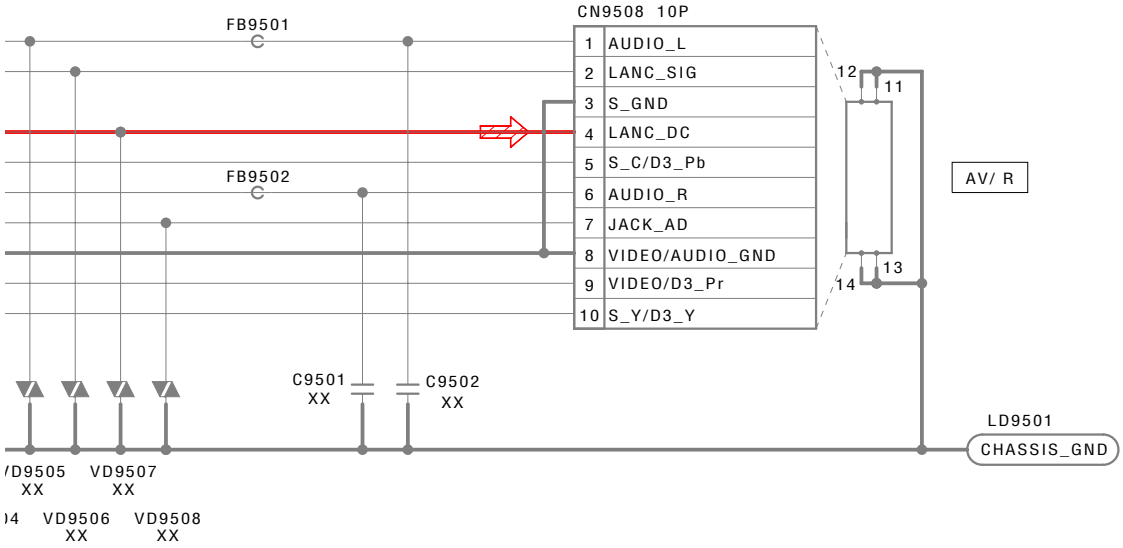
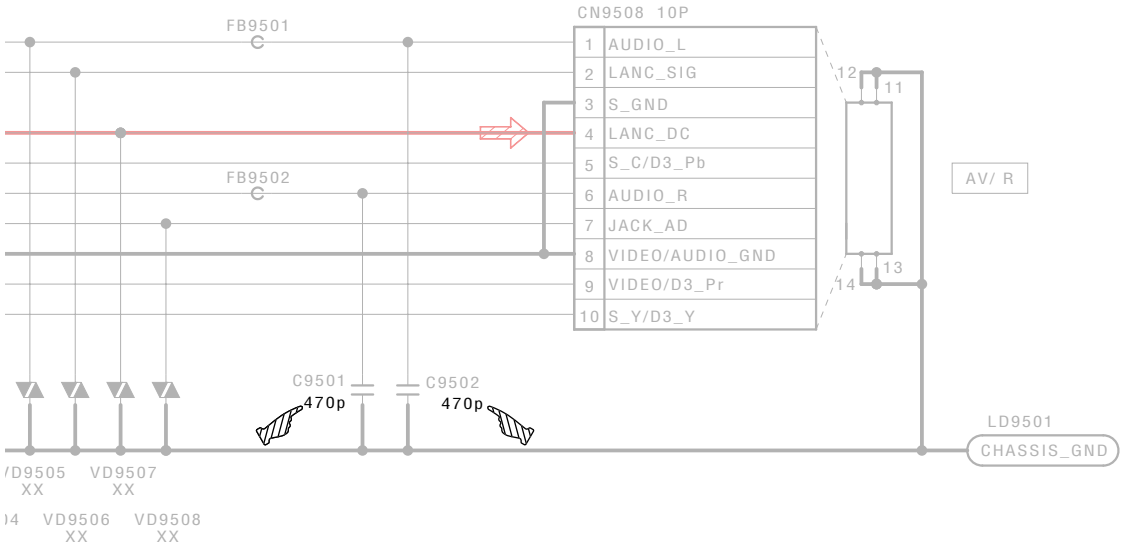
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-2. SCHEMATIC DIAGRAMS

☛ : Points changed portion

Page	Before change
4-43	**JK-376 BOARD** (Location: C-4 to D-7) 
	After change
	JK-376 BOARD (Location: C-4 to D-7) 

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS

☛ : Points changed portion ☛ : Points deleted portion

Page	Before change	After change
5-8	**5-1-7. HANDLE SECTION-2** Ref. No. Part No. Description ⚠*BH7001 1-756-615-51 HOLDER, BATTERY (Note)	**5-1-7. HANDLE SECTION-2** Ref. No. Part No. Description ⚠BH7001 1-756-615-61 HOLDER, BATTERY (Note)
5-15	**5-1-14. BT PANEL SECTION** Ref. No. Part No. Description 656 X-2320-852-1 HOLDER (24000) ASSY, BT	**5-1-14. BT PANEL SECTION** Ref. No. Part No. Description 656 X-2320-852-2 HOLDER (24000) ASSY, BT

☛ : Points changed portion
☛ : Points deleted portion
☞ : Points added portion

5-2. ELECTRICAL PARTS LIST

Page	Before change	After change
5-21	**JK-376 BOARD** Ref. No. Part No. Description ——————— — ——————— ——————— — ——————— ———————	**JK-376 BOARD** Ref. No. Part No. Description < CAPACITOR > C9501 1-164-935-11 CERAMIC CHIP 470PF 10% 50V C9502 1-164-935-11 CERAMIC CHIP 470PF 10% 50V
5-25	**PI-029 BOARD** Ref. No. Part No. Description < BATTERY HOLDER > ⚠*BH7001 1-756-615-51 HOLDER, BATTERY (Note)	**PI-029 BOARD** Ref. No. Part No. Description < BATTERY HOLDER > ⚠BH7001 1-756-615-61 HOLDER, BATTERY (Note)
5-31	**VC-543 BOARD** Ref. No. Part No. Description < IC > * IC2401 6-710-306-01 IC HYE18M256320CFX-7.5 * IC4201 6-808-417-01 IC MB91195ABGL-G-262-ERE1	**VC-543 BOARD** Ref. No. Part No. Description < IC > * IC2401 6-712-945-01 IC K4X56323PI-8GC6TJR * IC4201 6-808-662-01 IC MB91195ABGL-G-266-ERE1
5-32	**VC-543 BOARD** Ref. No. Part No. Description < IC > * IC4401 6-808-385-01 IC MB91195ABGL-G-261-ERE1	**VC-543 BOARD** Ref. No. Part No. Description < IC > * IC4401 6-808-667-01 IC MB91195ABGL-G-267-ERE1

6. ADJUSTMENT

6-1. CAMERA SECTION ADJUSTMENT

• Change of EVR Page Table

☛ : Points changed portion

Before change

Page 6-14

1-2. INITIALIZATION OF EVR DATA
1-2-2. Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

10. 1E Page table

Address	Initial value		Remark
	NTSC	PAL	
00 to 83	Fixed data-1 (Initialized data)		
84, 85	Fixed data-2		
86 to FF	Fixed data-1 (Initialized data)		

After change

Page 6-14

1-2. INITIALIZATION OF EVR DATA
1-2-2. Initialization of 8, 9, C, 13, 18, 1C, 1D, 1E Page Data

10. 1E Page table

Address	Initial value		Remark
	NTSC	PAL	
00 to 53	Fixed data-1 (Initialized data)		
54	Fixed data-2		
55 to 83	Fixed data-1 (Initialized data)		
84, 85	Fixed data-2		
86 to FF	Fixed data-1 (Initialized data)		

• Change of Flange Back Adjustment

☞ : Points added portion
☛ : Points changed portion

1-3. CAMERA SYSTEM ADJUSTMENTS
1-3-1. Camera System Adjustments
7. Flange Back Adjustment
7-1. Flange Back Adjustment
(Service manual page 6-28)

Adjusting method:

Order	Page	Address	Data	Procedure
1	0	01	01	
2	BF	19	AA	
3	BF	90	80	
4	6	61	01	
5				Wait for 3 seconds.
6	0	10	09	
7	F (9F)	4A	83	
8	F (9F)	4B	80	(Note 10)
9	0	10	00	
10	6	02		Check the data is “00”.
11	6	99		Check the data is “00”.
12	6	4D	40	
13	6	64	04	
14	0	10	07	
15	E (7E)	10		Set the bit value of bit1 is “0”, and press PAUSE (Write) button. (Note 8)
16	0	10	00	
17	6	40	01	
18	6	01	13	Press PAUSE (Write) button.
19				Wait for 1 seconds.
20	6	01	27	Press PAUSE (Write) button.
21	6	02		Check the data changes to “01”.
22	6	0C		Check the data is “00”.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	6	01	00	Press PAUSE (Write) button.
2	6	64	00	
3	6	4D	00	
4	6	40	00	
5	0	10	07	
6	E (7E)	10		Set the bit value of bit1 is “1”, and press PAUSE (Write) button. (Note 7)
7	0	10	00	
8	6	61	00	
9				Wait for 3 seconds.
10	0	10	09	
11	F (9F)	4A	00	
12	F (9F)	4B	00	
13	0	10	00	
14	6	01	25	Press PAUSE (Write) button.
15	6	02		Check the data changes to “01”.
16	6	01	00	Press PAUSE (Write) button.
17	BF	19	AB	
18	BF	90	40	
19	0	01	00	

Revision History

*: S.M. revised only top cover.

Ver.	Date	History	Contents	S.M. Rev. issued
1.0	2008.11	Official Release	—	—
1.1	2008.12	Revised-1	• Revision of Disassembly, Schematic Diagrams, Printed Wiring Boards and Mechanical Parts List S.M. Revised: Page 2-12, 4-1, 4-24, 4-74, 5-15	Yes
1.2	2009.04	Supplement-1 (DI09-013)	• Change of HELP • Change of Schematic Diagrams • Change of Repair Parts List • Change of EVR Page Table • Change of Flange Back Adjustment	Yes*